The Refrigeration Service Engineer

TECHNOLOGY DEPT.

VOL. 13 NO. 6 ★ ★ ★ JUNE . 1945

PUBLIC LIBRARY
JUN 29 1945
DETROIT

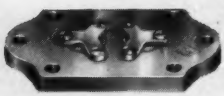
INSTALLING REFRIGERATING EQUIPMENT •
HOW TO SUBMIT DATA • SERVICE POINTERS •
SHOWMANSHIP [illegible] REFRIGERATORS •

COULD BE!

No one likes "Call Backs." Everyone likes to save time and work and make more money. Which could be why so many service-men demand Chicago Seals and Valve Plates.

CHICAGO GENERAL REPLACEMENT SEAL

MODERN DESIGN



ONLY CHICAGO VALVE PLATES HAVE REPLACEABLE VALVE SEATS. SIZES FOR MOST COMPRESSORS.

Sold By Jobbers

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER, Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 13. No. 6, June, 1945. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, $2.00 per year; all other countries, $3.00 per year.

COLD FACTS BY ANSUL

IN PRE-WAR PARIS, FASHIONABLE CAFE'S FOUND THEY COULD SERVE FRESH FROG LEGS THE YEAR 'ROUND BY KEEPING FROGS ALIVE IN WINTER ON FLIES CAUGHT AND FROZEN IN SUMMER.

MODERN REFRIGERATION SUPPLIES MANY UNUSUAL NEEDS..AND SPEAKING OF SUPPLIES....**ANSUL LIQUID SULFUR DIOXIDE — ANSUL LIQUID METHYL CHLORIDE** ARE IMMEDIATELY AVAILABLE.

Our technical book, "Ansul Refrigerants" (3rd Edition) available upon request

ANSUL CHEMICAL COMPANY, MARINETTE, WIS.

"Now in our 30th year"

AGENTS FOR KINETIC'S "FREON-11," "FREON-12" AND FREON-22"

Drying A REFRIGERATION SYSTEM

No. 2 of a Series

Moisture is refrigeration system enemy No. 1 Just a few drops can freeze up the expansion valve and put the system out of operation. Sometimes a system will operate satisfactorily for weeks or months, and then have moisture trouble because moisture in the system finally worked out of other parts and into the expansion valve.

Hence, thorough drying of a refrigeration system is of first importance, and the service man can't take too many precautions to be sure that all moisture is eliminated.

An important factor in keeping a refrigeration system free of moisture is the manner in which equipment is handled when taking it to the job.

If the parts are not capped or sealed tightly they are likely to contain moisture when they are installed. Refrigeration parts often are carried in a cold service car or kept in a cool place, such as a basement. When a cold part is taken into a warm room for installation, and is not sealed, moisture will condense on and in that part because its temperature is lower than the dew point of the air.

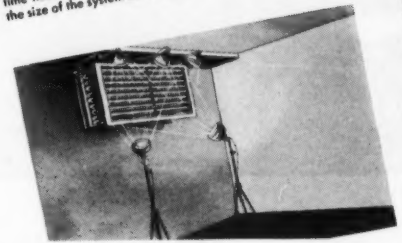
Therefore, it is important that all parts be kept closed until they have warmed up to the temperature of the room in which they are to be installed.

Neither heat nor vacuum alone is sufficient. The oven temperature will be governed by the construction of the unit to be dried; and the greater the vacuum, the more completely dehydrated the system will be.

Whenever possible, a "package" system which shows evidence of moisture should be removed from the job and dried in the above manner. However, if conditions do not permit removal of the unit for baking, or if the system is one which has been assembled in the field, satisfactory drying may be accomplished by heat and vacuum if the proper equipment is available.

The equipment necessary for drying a system on the job, by the heat and vacuum method, consists of infra-red or heat lamps, and a portable vacuum pump capable of drawing a vacuum of 28 or 29 inches of mercury. The following procedure is recommended:

Connect the vacuum pump to the system and start it running. With the heat lamps, warm every part of the system simultaneously, including all the tubing, and keep them warm, with the pump operating continuously. The length of time necessary to completely dehydrate will depend upon the size of the system and the capacity of the vacuum pump.



Space limitations prevent giving the full text of this service help on this page. The service bulletin illustrated here is complete. Write for your copy.

ok, available on request. Write for your copy.

WRITE

FOR YOUR COPY OF THIS SERVICE HELP

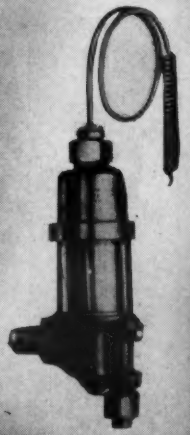
This is the second of a series of service bulletins, published by Detroit Lubricator Company. They are printed on 8½" x 11" paper, punched for a standard loose leaf binder. Copies may be had on request. Write for yours.

"DETROIT" VALVES

For Every

REFRIGERATION NEED

There is a "Detroit" Expansion Valve of superior quality for every refrigeration need. Made better, they do the job better. Refrigeration men everywhere prefer "Detroit" Expansion Valves and "Detroit" Solenoid Valves.



DETROIT LUBRICATOR COMPANY

General Offices: DETROIT 8, MICHIGAN

Division of American Radiator & Standard Sanitary Corporation

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators.

About Returning Empty Cylinders

-as Uncle Sam might say it...

"They call me 'Uncle' Sam. But, I am not an Uncle at all. I am you. I am *every* American. That makes my problem your problem — and your problem mine. Listen:

"War creates new problems which cannot be solved without cooperation. Here's one: Refrigerant manufacturers have been urged to deliver increased quantities of refrigerants. To do the job, they need thousands of additional steel cylinders. But, steel is vital to our boys in stopping the enemy!

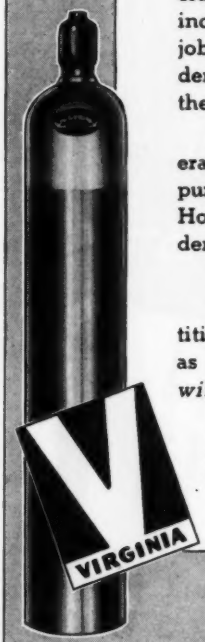
"Because our fighting men come first, refrigerant manufacturers have been permitted to purchase only a limited number of new cylinders. How, then, can they supply the heavy summer demand for vitally needed refrigerants?

"Brother, that's where you come in!

"Here's how: First, buy refrigerants in quantities you can use within 30 to 60 days. Second, as soon as containers are emptied *return them without delay to the refrigerant manufacturer.*

"See what I mean? We've got to keep existing cylinders at work all the time! You are an American — and I'm counting on you.

"Let's do the job!"



VIRGINIA Smelting Co.

WEST NORFOLK, VA.

76 BEAVER STREET, NEW YORK 5 :-: 131 STATE STREET, BOSTON 4

Agents for Kinetic's "Freon-12" — "Freon-22" — "Freon-11"

Introducing . . .

TRACE

REFRIGERANT LEAK DETECTOR

For tracing all leaks in refrigerating systems . . . especially the hard-to-find leaks . . . nothing excels Trace. Small additions of Trace color the oil in a system a vivid red, which quickly appears on the exterior and marks the site of the leak.

Trace incorporates the long experience of the makers of Thawzone in the refrigeration field. It is tops for safety and effectiveness. Ask your jobber for it. For full particulars consult him or write us for literature.

By the makers of

THAWZONE

Fully Protected by U. S. Patents

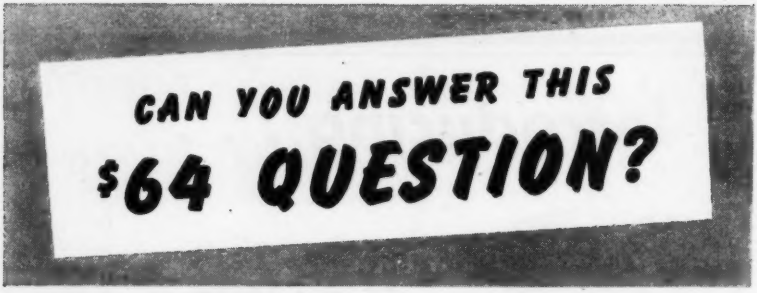
The **PIONEER FLUID DEHYDRANT**

TRADE PRICES

4 oz. bottle	$1.00
1 qt. container	5.00
1 pt. bottle	3.00
1 gal. container	16.00

HIGHSIDE CHEMICALS CO.

195 VERONA AVE., NEWARK 4, N. J.



HOW SOON CAN YOU GET THE BEST REFRIGERATION UNITS FOR YOUR PRODUCTS?

"HOW SOON"? is the great big $64 question to stump the experts. And it is true that an exact answer would make a lot of people very happy. Fully aware of many wartime contingencies and uncertainties, we nevertheless feel obligated to keep you informed as much as possible concerning deliveries. Here is information that may be of help to you:

CONVENTIONAL UNITS are in production for high rated orders. The limiting factors are electric motors and castings. In spite of the fact that we have many thousands of motors and tons of castings placed in advance of orders, the increasing volume of business and unprecedented demands of the war on the facilities of the motor manufacturers and foundries have created an acute shortage. We advise manufacturers to place second and third quarter requirements at once and others to anticipate at least six months.

COMPRESSORS are in increasing demand due particularly to the growing replacement market which has resulted from restrictions or "freezing" of many types of equipment for the past three years. There are some critical materials in compressor manufacture and some manpower problems.

We suggest that you anticipate requirements at least three to six months, depending on the rating.

HERMETICS—Production discontinued for the duration. Samples for postwar products are available to legitimate manufacturers.

WRITE OR WIRE FOR FURTHER INFORMATION

Now . . . and Postwar . . . Chieftain Is the Leader.

Chieftain

TECUMSEH PRODUCTS CO.
TECUMSEH • MICHIGAN

You'll do faster flaring with a SLIP-ON YOKE!

The No. 195-F Imperial Flaring Tool with the Slip-on Yoke has made a great hit with refrigeration men everywhere.

The illustrations show how easy it is to use. The yoke is made so that it slips right over the bar instantly without twisting or turning. Inside edges of the yoke are slotted so that once in position a slight turn holds it in place.

If you haven't used one you will be surprised how this improvement speeds up flaring.

The No. 195-F Flaring Tool makes correct 45° flares on 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. soft copper, brass or aluminum tubing to make up leakproof SAE flare joints.

If your Jobber cannot supply you with one of these flaring tools from stock he can secure it for you in a short time.

THE IMPERIAL BRASS MANUFACTURING CO., 534 South Racine Ave., Chicago 7, Illinois

IMPERIAL

FITTINGS • STRAINERS • DEHYDRATORS • VALVES • FLOATS • CHARGING LINES
TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING

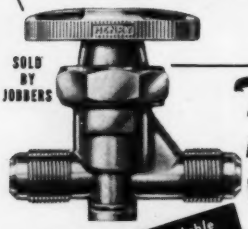
Only Henry makes a Diaphragm Packless Valve that is

NON-DIRECTIONAL

By means of a patented balancing channel in the lower valve stem, explained in detail below, the Henry Diaphragm Packless Valve cannot stick shut regardless of the pressure differential above or below the valve seat. When using a conventional valve, there is always the possibility that a valve installed in reversed position could fail to open if sufficiently high pressures should develop above the seat. The Henry Diaphragm Packless Valve, however, can be relied upon to give positive performance under all conditions of service because it is truly non-directional.

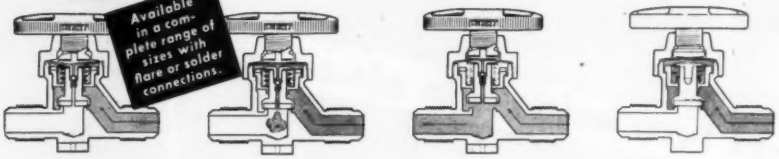
You will also like the Henry feature of having inlet and outlet ports in line on two way and three way valves. This eliminates tube bending and results in neater lines and lower installation costs.

During the war Henry Diaphragm Packless Valves have been widely favored by all branches of the armed services. It is only natural that, as our country gradually turns to the problems of Peace, this Henry Product again will be the logical choice of manufacturers, jobbers, contractors and service organizations everywhere.



SOLD BY JOBBERS

The Difference Between a Henry *Non-Directional Balanced-Action Diaphragm Packless Valve and a Conventional Packless Valve*



BALANCED-ACTION VALVE IN CLOSED POSITION—High pressure above the seat, low pressure below the seat. High pressure regions are shown in color. Pressure in spring cage below diaphragms is the same as that in main passage of valve body above the seat. This is due to seepage between the lower stem and the guide. Downward pressure of the bearing plate on the diaphragms seals the upper port of the balancing channel.

OPENING THE BALANCED-ACTION VALVE—As hand wheel is turned to open valve the diaphragms, because of pressure beneath them and their own snap action, rise and expose the upper port of the balancing channel. The high pressure, shown in color, unseats ball check and is instantly released through the open channel to the low pressure region below the valve seat, thus achieving "balanced-action" by equalizing pressures.

BALANCED-ACTION VALVE IN FULL OPEN POSITION—Equalization or balancing of pressures above and below the seat, as shown in color, guarantees that this valve can never "stick shut" but will always open positively, regardless of original differential in pressures. When there is high pressure below the seat and low pressure above, the balanced valve opens easier than other types because of the light weight spring.

CONVENTIONAL TYPE WITHOUT BALANCED-ACTION—As hand wheel is turned to open valve the diaphragms rise. When the differential between high pressure, shown in color, above seat and low pressure below seat is greater than force exerted by heavy spring, stem "sticks shut"—valve remaining closed. The heavy spring required in this type of valve greatly increases diaphragm wear and strain and causes stiff closing.

HENRY VALVE COMPANY
3260 WEST GRAND AVENUE, CHICAGO 51, ILLINOIS
EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, N.Y. • CABLE: ARLAB

PACKLESS AND PACKED VALVES • STRAINERS • DRYERS FOR REFRIGERATION AND AIR CONDITIONING
AMMONIA VALVES • FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

HERE IS REALLY LOW-COST REFRIGERATION

PAR BY LYNCH

PAR Condensing Units are designed and manufactured on the same principles as fine automobile motors, with such outstanding features as drop forged steel crankshafts, hardened and lapped to mirror like surface. . . . Oilite crankshaft bearings with a high degree of porosity to insure constant lubrication. . . . Ring type pistons, two compression and one oil ring, hand fitted to each piston. These and many other features as oversized air-cooled condensers and large capacity receivers assure you of economical, efficient refrigeration and extra years of trouble-free service.

PAR units are available in models and sizes from 1/6 H.P. to 2 H.P. air-cooled units and from 1 H.P. to 5 H.P. water-cooled units. See your PAR Jobber or write today for complete specifications and illustrated catalogue R-96 and supplement R-96A on the PAR line of air-cooled and water-cooled condensing units.

. . . . By Comparison — You'll Buy PAR

PAR Lynch DIVISION

Manufacturing Corporation, Defiance, Ohio U. S. A.

Here is the New

MUELLER BRASS CO.

REFILLABLE DEHYDRATOR

Readily Removable Inlet For *Easy Refilling!*

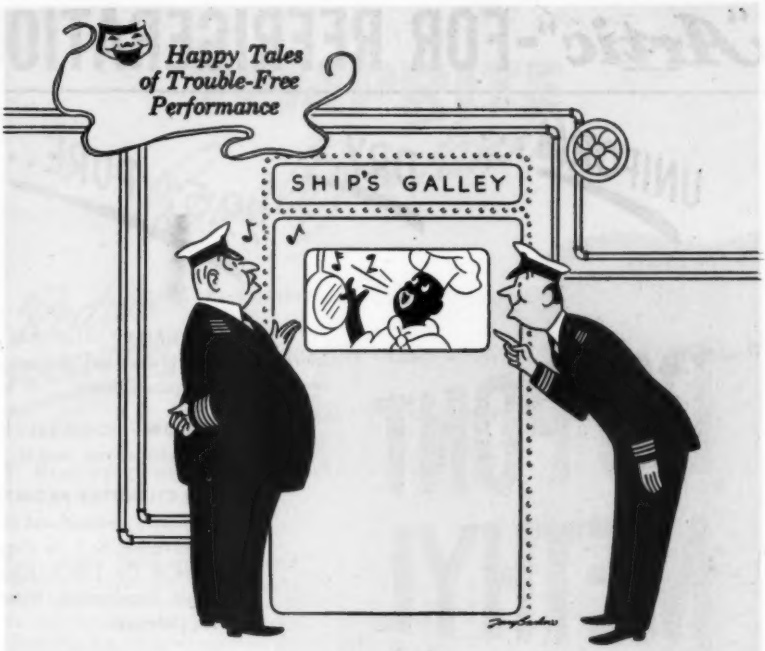
When recharging our new Dehydrator, simply remove the inlet plug . . . back out the slotted inlet screen tube . . . shake out the exhausted agent, then replace with new.

In addition to this convenient feature (see illustration above) Mueller Brass Co. Filters and Driers are provided with the CONE SCREEN OUTLET, a specially designed filtering element that adds immeasurably to the life and efficiency of Driers and Filters.

Fine crystals or powder, which continually break away from the Dehydrating Agent, are forced to the base of the cone, leaving the center and tip of the screen open for the free flow of refrigerant. The cone screen itself is filled with pure wool which traps any particles that are sufficiently fine to pass through the screen mesh.

Particular attention has been given to screen areas in Mueller Brass Co. Filters and Dehydrators so that each size permits efficient passage to the maximum refrigerant volume that is used in a particular size refrigerant line.

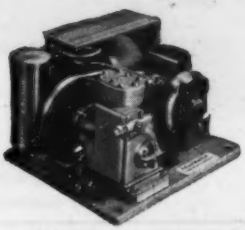
MUELLER BRASS CO. PORT HURON, MICH.



Captain: *"What's going on here?"*

1st Mate: *"Alamo's been bubbling ever since we equipped the galley with that new Kelvinator Condensing Unit!"*

Superior design . . . superior engineering are the reasons why Kelvinator Condensing Units for 30 years have meant *more* performance, *more* dependability, *more* economy. That's why, when specifying condensing units, progressive service men always say *"Kelvinator"!*



Kelvinator distributors and zone offices stock a complete line of refrigeration supplies. See them for your installation material such as valves, fittings, dryers, etc.

Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT

CONDENSING UNITS
SEALED · OPEN

For Your Home—Remember Kelvinator Refrigerators, Electric Ranges, Water Heaters and Home Freezers.

"Artic"-FOR REFRIGERATION

UNIFORM... DRY... 99.5% PURE...

HIGH-PURITY "Artic" Methyl Chloride is designed to meet your every requirement.

ORDER NOW—but don't stock up! It's available as you need it.

RETURN CYLINDERS PROMPTLY! —Help assure yourself and others rapid deliveries! E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT METHYL CHLORIDE SPECIFICATIONS

Purity . . . . . 99.5% Methyl Chloride
Moisture . . . . . 0.008% by wgt. max.
Acid (as HCl) . . . 0.001% by wgt. max.
Residue on Evaporation 0.01% by wgt. max.
Boiling Range(760mm) –24.6° to—23.6°C.
Color . . . . . water white, clear

SALVAGE WASTE PAPER! IT'S VITAL TO WAR!

DU PONT ELECTROCHEMICALS

DU PONT REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

TEMPRITE
Equalizer Tanks

Reduce wear on:

1. **Condensing unit motors**
2. **Condensing unit belts**
3. **Condensing unit control points**

and

4. **Reduce consumption of electric current**

Now, more than ever before, TEMPRITE Equalizer Tanks are important in prolonging the life of condensing units. Users have found that an Equalizer Tank will overcome the short cycling condition caused when the load applied to a cooler or lowside is intermittent and of short duration. The elimination of condensing unit short cycling reduces excessive wear on the motor, belt, and control points and lowers the consumption of electric current.

To overcome this short cycling the TEMPRITE Equalizer Tank acts as a suction gas storage tank between the lowside and the compressor.

These TEMPRITE tanks can be installed on all types of refrigeration equipment. They are made of cold rolled steel, are electrically welded, pickled and neutralized, insuring them of being free from scale and rust; they are then dehydrated and thoroughly tested for leaks.

TEMPRITE Equalizer Tanks carry Underwriters Laboratories, Inc., approval. Protected by U. S. Letters Patent.

5 sizes available

¼ H.P. up to 15 H.P.
Condensing Units

LOOK ***10 Day Delivery!***

Dealers: Here is good news for you—TEMPRITE Equalizer Tanks can be ★ delivered within 10 days after we receive your order with the proper priority ★ extended to us. For complete information write our sales department today.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous Liquid Cooling Devices

45 PIQUETTE AVENUE . . . DETROIT 2, MICHIGAN

The DFN system

Stays ON THE LINE Longer

—Needs Less Servicing Because It Holds More Moisture, Sediment and Sludge!

DFN Cartridges have greater moisture-adsorption capacity, because they are *mechanically-packed* with the correct quantity and density of dust-free, thoroughly-reactivated drying agent. There is no danger of loose, non-uniform packing or loss of dehydration strength in servicing . . . common failings in standard refillable types. Hermetically-sealed DFN Cartridges are ready for use when wanted.

They hold more sediment and sludge without pressure drop, too, because an exclusive DFN strainer and filter assembly covers the *complete area* of the outlet and inlet with multiple layers of wire mesh, bronze wool and felt.

Each DFN Cartridge provides triple-protection against freeze-ups, clogging and corrosion. The DFN Shell is used over and over again. You merely change inexpensive cartridges as needed —multiplying your savings in time, labor and parts with each successive change. Ask your distributor or write for Catalog R-7.

McIntire Connector Company, Newark, 5, New Jersey

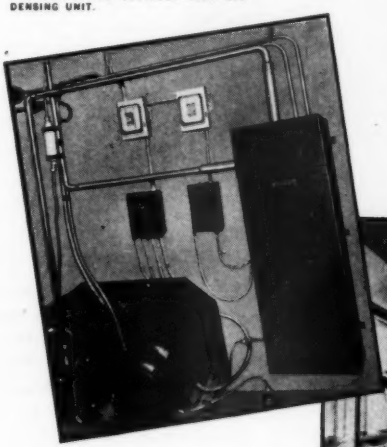
Only the DFN SYSTEM DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

THERMOBANK

by KRAMER

INSTALLATION SHOWING THERMOBANK AND DEFROSTING CONTROLS WITH CONDENSING UNIT.



With the Thermobank a low temperature system is just as automatic as a 40° system.

THERMOBANK EVAPORATOR INSTALLATION IN MINUS 20° F ICE CREAM HARDENING ROOM.

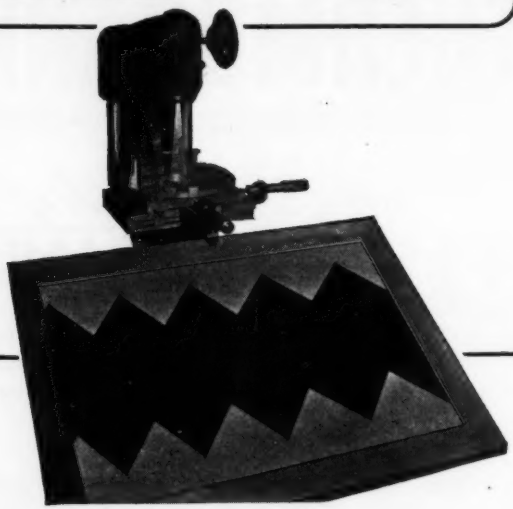
NO ELECTRIC HEATERS
NO BRINE SPRAY
NO WATER SPRAY

Write for Bulletin T-V-345 RS-3

KRAMER TRENTON COMPANY

Trenton, New Jersey

100 Times Enlarged



In the production of Ranco Commercial and Domestic Refrigeration Controls certain parts are inspected by this instrument which projects a silhouette of the part 100 times enlarged. This is indicative of the extreme care used in the manufacture of Ranco controls . . . it is your assurance that your installation of a Ranco Refrigeration Control will bring no regrets . . . that it is a precision instrument; alert, responsive, accurate.

And, in addition, Ranco Controls are attractively designed and constructed. You can be proud, as well as confident, when you install Ranco.

Ask Your Ranco Jobber

Ranco Inc.

COLUMBUS, OHIO

The Refrigeration Service Engineer

Vol. 13 · No. 6

June, 1945

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems

Official Organ
REFRIGERATION SERVICE ENGINEERS SOCIETY

The Cover

Air duct of a portable carrier air conditioning unit used to cool interiors of huge war planes. When final work is done outside the summer sun makes the metal interiors unbearably hot. Air conditioning permits continuous work under comfortable conditions.

Published by
Nickerson & Collins Co.
433-435 North Waller Ave.
Chicago 44

Telephones Austin 1303-1304-1305

EASTERN OFFICE
420 Lexington Ave., New York 17
Telephone Lexington 2-4816

Publishers of Technical Books and Trade Journals Serving the Refrigeration Industries for over 30 years.

Subscription Rates United States $2.00 per year. Single copies 25c. All other countries $3.00 per year

Copyright, 1945
by Nickerson & Collins Co., Chicago, 44

CONTENTS

In This Issue 19
Government Bureaus—News and Rulings 20
L-38 Revoked! Now What? 20
265,000 Refrigerators Scheduled 21
Reconversion Policies Amplified 22
Applications for Construction and Equipment 22
Construction Order L-41 Amended 23
Methods of Obtaining Copper Wire 23
CMP Regulation 9A Tightened 24
New Policies on Government Loans to Manufacturers 25
Krug Predicts Huge Demand for Civilian Goods 25
The Installation and Servicing of Refrigerating Equipment by *S. A. Cole* 26
How to Submit Data by *R. L. Hendrickson* 31
Construction, Operation and Servicing the Coldspot Electric Refrigerator 33
Service Pointers 39
Prest-O-Lite Tank Adapter 39
Control Remodeling 39
Fluids for Air Conditioner Filters 39
Moisture in Grunow 40
Compressor Screen Plugged 40
Commercial Selling 41
Showmanship Will be Needed to Sell Refrigerators in Postwar Market by *Robert Latimer* 41
Air Conditioning Industry Predicts Huge Postwar Expansion 43
Experimental Locker Plant Opened in Ithaca, New York 45
Frozen Food Cabinets in Postwar Stores 46
Questions and Answers 47
Westinghouse Announces New Home Freezers 56
Refrigeration Equipment Manufacturers Association Starts Public Relations Program 68
R.S.E.S. News 70
Birmingham Chapter Receives Charter 70
Houston Chapter Receives Charter 70
Chapter Notes 70
New and Improved Appliances 82
Self-Locking Driv Lok Pins 82
Condensation Drip Stopped by Pipe Tape 82
Refrigeration Pullers 82
"Trap-Dri" Combines Filter and Drying 84
Visoleak Tag Instructs Owners 84
Water Coolers Back in Production 84
Removing Oil from Refrigerant Gas 84
Hood New R. E. M. A. President 86
News of the Industry 88

Every refrigeration man needs this new catalog!

Designers, engineers, service-men, purchasing agents—every key department head in the refrigeration field—should have this new Weatherhead Refrigeration Catalog. It gives you at a glance detailed, illustrated data on the multitude of *improved* refrigeration parts Weatherhead engineers have designed and created for original installations and replacement work. Write or call one of our branch offices for your copy of this 40-page catalog—It's free!

Six important sections

Refrigeration Valves • *Dehydrators*
Strainers • *Manifold Assemblies*
Accessories • *Fittings*

Look Ahead with **Weatherhead**

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO
Plants: Cleveland, Columbia City, Ind., Warsaw, Ind., Los Angeles
Canada—St. Thomas, Ontario

BRANCH OFFICES: NEW YORK • PHILADELPHIA • DETROIT • CHICAGO • ST. LOUIS • LOS ANGELES

IN THIS ISSUE—

A summary of government rulings affecting the refrigerating industry starts on page 20. The Order revoking Order L-38 is summarized along with some comment on some contemporary regulations still in effect. Other orders cover production of new refrigerators, construction and equipment applications, method of obtaining copper, obtaining maintenance repair and operating supplies.

New policies making it easier for small manufacturers to obtain government loans, as announced by the War Plants Corporation are outlined on page 25.

A huge demand for civilian goods as America swings back to peacetime production is predicted on page 25 in a report made by J. A. Krug, Chairman of the War Production Board.

Many service men have learned that an important problem in servicing refrigerating equipment is finding and getting at it. With that in mind some valuable suggestions on installation and servicing of refrigerating machinery are given in the article starting on page 26.

When a service engineer submits a problem to his jobber or to a manufacturer, much too often the information is so meagre that it leaves the jobber or manufacturer guessing as to just what he wants. On page 31 some practical suggestions are made on how to submit data, along with an analysis and re-statement of sample problems.

The seventh article on the Coldspot refrigerator covering the thermostats and electrical diagrams for both cabinet and unit starts on page 33.

Useful information is being supplied in each issue through service pointers and repair suggestions written by practical service engineers. See page 39.

A veteran refrigeration service manager in an up-to-the-minute sales story on page 41 tells how he is gearing his organization for postwar business. He offers a new idea on how to back up sales arguments through the use of photographs.

A survey made by a New York newspaper shows promise of a huge postwar expansion by the air conditioning industry, as reported in the article on page 43. Service engineers will be interested in the many new applications being opened up in this field.

A modern locker plant has been opened at Ithaca, N. Y., to be used for experiments and research by the Cornell School of Nutrition. See page 45.

The place of frozen food cabinets in postwar food stores is discussed in an article on page 46. This opens another field for service engineers who are keeping abreast of new developments.

The Question and Answer section starting on page 47 offers practical information on many points that have baffled service men.

A new home freezer model for city and farm use, to be manufactured by Westinghouse is described and illustrated in the article on page 56.

To promote the interests of the refrigeration and air conditioning industry, the Refrigeration Equipment Manufacturers Association has inaugurated an extensive public relations program. Details on page 68.

The Refrigeration Service Engineers Society welcomes two new chapters and the revival of another chapter that has been inactive for some time. The largest charter member chapter in R.S.E.S. history was recently presented its charter Turn to page 70 for details and activities of other chapters.

Government Bureaus—*News and Rulings*

RULINGS and announcements issued by the various Government Bureaus that are of general interest to the refrigeration service industries are summarized below. Only the essential facts are given in most cases, and those who desire further or more complete information on any specific regulation or announcement are advised to write the proper Government agency.

L-38 Revoked! Now What?

ENCOURAGED by the revocation of Limitation Order No. 38 (May 12), some dealers were overly enthusiastic in the expectation that a free flow of equipment was in immediate prospect. Signs on dealers windows announcing "order your refrigeration equipment—no priority needed" immediately appeared. A true statement of fact, of course, if delivery dates are of no consideration.

Briefly the situation remains as formerly—rated orders now on manufacturers books and to be placed in the future will have first preference.

The cancelling of L-38 does not rescind general priority regulations and all persons manufacturing or selling refrigeration equipment are still bound by these regulations requiring rated orders to be filled in advance of non-rated orders; the highest rated orders being given preference over lower rated orders.

A recent survey conducted by THE REFRIGERATION SERVICE ENGINEER among leading condensing unit manufacturers indicated that it will require from 4 to 12 months to fill rated orders now on their books. This time element is somewhat dependent on the anticipated "open ending" of CMP regulations after July 1, when a greater flow of materials may be available. (May 28—WPB released brass mill products for immediate delivery to civilian nonpriority purchasers five weeks ahead of the scheduled July 1 release of steel, copper, and aluminum.)

Another factor that is believed to be a definite set-back to the distributor, dealer and service man is priority regulation 27 which permits all of the small fixture manufacturers to enter production now on a blanket AA-4-V3. These firms may order heavily and absorb the available supply of condensing units for the next six months.

Revocation of L-38 means that there is no specific restriction governing the manufacture or sale of commercial refrigeration equipment. Manufacturers of condensing units, coils, fixtures, etc., whose production under this order was limited, are now free to manufacture as much equipment as they wish to make. However, the allotment of materials and manpower is still governed by WPB and WMC. This means that manufacturing will be only to the extent permitted regulations still in effect. There is likewise no restrictions as to the sale of this class of equipment either from manufacturer to distributor, distributor to dealer, or dealer to user.

Manufacturers in general will fill reinstated rated orders recently cancelled by rescinding P-126 based on the original date of the order received under P-126. As long as the priority system is in effect, it will be to the advantage of the service engineer to extend priority ratings if available.

Materials, such as motors, malleable castings, forgings, condensers, and valves appear to be the principal components that are preventing delivery of many units. Until these components are produced in quantities for civilian consumption, refrigeration equipment available for civilian requirements will continue to be in short supply.

The press release of the government order revoking Order L-38 follows:

WPB Revokes L-38

The War Production Board has revoked Order L-38, the limitation order on industrial and commercial refrigerating and air conditioning equipment. At the same time the restriction from L-38 on the use of blanket MRO ratings for new equipment was set up as Direction 10 of Priorities Reg. 3. Some of the restrictions on the use of certain materials in drinking water coolers, coil and tube assemblies and service connections under L-126 were also revoked.

Since Order L-38 has been revoked, it no longer stands as a bar to production of various items of refrigeration equipment. Despite this fact there is no abundance of raw materials and components from which this equipment can be manufactured. For this reason no quick easing of the equipment and supply situation can be expected.

Furthermore, Priorities Regulation—1 has not been revoked and remains in full force along with others including CMP Regulation 5. This means that rated orders take preference over unrated orders and until there are no more scarcities in equipment and supplies, ratings should be used to insure the best possible handling of orders to which ratings can be applied. Under CMP Regulation 5 and other orders, various sections of the refrigerating industry have been given preference ratings and full use of them should be made wherever they apply. In connection with this it should be pointed out that these ratings principally cover maintenance and repair parts and operating supplies. Where equipment outside this category is needed, it would be well to apply without delay to WPB for such priorities. Restrictions on construction remain in full force.

The fact that manufacturers are permitted to take non-rated orders and eventually to fill them, does not insure that such orders will be filled by any particular date as long as present scarcities prevail. Since Priorities Regulation—1 remains in effect, rated orders do get preference, which should be utilized to secure the best possible delivery on industry requirements.

Other WPB orders recently revoked are:

M-9-c and c-4, copper conservation orders which formerly restricted the use of copper in a large number of products and applications.

L-292, Limitation order on sale of food processing machinery.

L-221, Limitation order on sale of electric motors and generators.

U-1, certain directions and supplementary orders which included restrictions on service connections for power, water and gas.

S S S

265,000 Refrigerators Scheduled; Repair Parts Have Preference

AMENDMENT of Limitation Order L-5-c on June 2, 1945, to permit resumption of domestic mechanical refrigerator production in the third quarter of 1945, subject to assignment of specific production authorization to manufacturers by the War Production Board, was announced June 4 by WMB. Limitation Order L-5, issued September 30, 1941, to restrict production of refrigerators, was revoked simultaneously.

Limitation Order L-5-d, controlling the sale, transfer, and delivery of all new domestic mechanical refrigerators, remains unchanged. All the refrigerators that can be made in the third quarter are expected to be added to the frozen stockpile, and will be released by WPB only to meet military, hospital, and other highly essential requirements. None are expected to be available for distribution to the general public through normal retail channels in the third quarter. L-5-c had been issued February 23, 1942, to halt refrigerator production effective April 30, 1942.

Under the amended L-5-c, manufacturers may apply for permission to make new domestic mechanical refrigerators by filing Form WPB-3700 with the WPB field office for the district in which the plant where the refrigerators are to be made or assembled is situated. Manufacturers in Group 1 and 2 labor classification areas who employ more than 100 workers are required to obtain approval (on Form WPB-3820) for the use of labor for refrigerator production.

WPB will assign production authorizations within the approved third-quarter program for 265,000 domestic mechanical refrigerators. Authorizations will be issued equitably among applicants. Wherever practicable, each applicant will receive a pro rata share of his capacity to produce, based on his facilities and the availability of manpower. Authorizations will not be dependent upon the applicant's having been engaged in the production of domestic mechanical refrigerators at some previous time. In general, smaller manufacturers will be authorized to produce to a greater extent of their capacity than larger ones, WPB said. An AA-3 preference rating will be assigned to materials for production under the program.

Manufacturers who wish to produce refrigerators in excess of their authorizations under the WPB program may apply for permission to do so under the "spot authorization" procedure (Priorities Regulation 25). However, priorities assistance in obtaining materials will be granted by WPB only for production under the approved program.

Production of parts for use in servicing or repairing used refrigerators is not restricted by L-5-c. To assist manufacturers in obtaining materials for the production of repair parts, WPB will issue allotments of controlled materials and assign an AA-1 preference rating for the acquisition of needed materials and components. Applications for such priorities assistance are to be filed on Form CMP-4B. Materials obtained in this manner for the production of repair parts are not to be used in the production or assembly of new refrigerators.

Reconversion Policies Amplified

THE reconversion policies and procedures that were outlined May 10, 1945, by J. A. Krug, Chairman of the War Production Board, were amplified May 11 through the issuance of a summary of the report being prepared by the Committee on Period One (CPO), headed by John D. Small, WPB's Chief of Staff. "Period One" is the name given to the time between the victory in Europe and the victory over Japan.

The summary contains digests of reports submitted to CPO by eleven of its subcommittees, and is designed as a guide to the operating personnel of WPB in carrying out their duties and responsibilities.

The primary goal of WPB continues to be to assure the fulfillment of war production requirements for a speedy victory in the Pacific. The progressive relaxation of WPB controls will in no case be permitted to interfere with this primary objective.

During the third quarter, CMP will operate as heretofore with the exception noted below, covering the military, war supporting, essential civilian and essential export programs. During the fourth quarter CMP will operate as heretofore but it is expected that its present coverage of programs will be reduced.

The Controlled Materials Plan will be open-ended effective July 1, 1945, so as to permit the delivery after that date, without CMP allotments, of steel, copper, and aluminum, where delivery can be made without interference with authorized CMP orders. In other words, orders may be placed immediately for deliveries to be made after July 1, 1945. During the remainder of the second quarter, however, deliveries can be made only on authorized CMP orders. It must be clearly understood that permission to place an unrated order does not guarantee delivery of that order. For example, sheet steel may continue tight and deliveries on unrated orders may not be possible for some time.

(a) It will be necessary to retain a substantial number of orders covering the production, distribution and use of materials and products that will continue in short supply. Among these will be, for example, orders covering textiles, lumber, leather, many chemicals, containers, pulp and paper, tin, lead, cadmium, rubber, etc.

(b) Insofar as possible, orders now limiting the production of civilian hard goods (generally those now listed in Direction I of Priorities Regulation 25) will be revoked progressively as resources are released. The orders to be retained, at least for some time, in their present or modified form, will include at least the following nine: L-1-e, trucks; L-2-g, passenger automobiles; L-5-c, domestic mechanical refrigerators; L-13-b, metal furniture; L-23-b, domestic electric ranges; L-23-c, domestic stoves and cooking appliances—non-electric; L-257, farm machinery; L-260-a, wood furniture; L-265, radios, etc.

Through the third quarter, 1945, and in some cases for the balance of the year, existing civilian programs already authorized will continue to receive affirmative priorities assistance, including CMP allotments for production materials. The production of additional civilian products will not receive such affirmative assistance on a program basis except where it is determined by the Requirements Committee that such assistance is needed to meet minimum war supporting or critical civilian and export needs.

The construction control order L-41 will be retained but will be progressively relaxed as resources become available. L-41 is expected to be amended soon to increase the dollar exemption limits, and the standards for authorizing larger projects are being relaxed somewhat to permit approval of projects that contribute to large scale future employment and to satisfy other highly essential needs.

S S S

Applications for Construction and Equipment

A SUMMARY of applications approved during the period April 1 through May 19 for preliminary reconversion (bottleneck items) construction and equipment, on which preference ratings have been authorized under Priorities Regulation 24 and Direction 5 to Conservation Order L-41, was released May 25 by the War Production Board.

By far the greatest number of applications to date, WPB said, have been from the automotive industry. Domestic mechanical refrigerators come next, with other industries trailing far in the rear.

A total of 12 applications for construction and equipment were approved on which preference ratings were authorized under PR-24 and L-41 Direction 5 to domestic refrigerator manufacturers, involving a total of $1,319,000. Two manufacturers of commercial refrigeration equipment were granted authority for expenditures of $137,000.

Construction Order L-41 Amended

THE limits on construction work done without specific WPB approval have been increased in the amendment to Order L-41 issued on May 29. The new provisions on annual dollar limits are as follows:

(d) Permitted construction. (1) It is not necessary to get War Production Board permission under this order for construction jobs done on a unit if the total cost of all of the construction jobs begun on that unit in the same calendar year does not exceed the appropriate allowance indicated below. If a building is used for more than one purpose and might therefore fall within more than one of the classes indicated, the use to which the greatest part of the floor area is or will be put will determine the allowance.

(i) $1,000 for a house designed for occupancy by one family (including a farmhouse, i.e., a building on a farm used for residential purposes); $2,000 for a residential building designed for occupancy by two families; $3,000 for a residential building designed for occupancy by three families; $4,000 for a residential building designed for occupancy by four families; $5,000 for a residential building designed for occupancy by five families. Note that paragraph (e) (1) does not give an exception for maintenance and repair for residential buildings covered by this subparagraph. Accordingly, the limits given above apply to repair jobs and maintenance work as well as to alterations and new construction.

(ii) $1,000 for a farm, excluding the farmhouses which are covered by paragraph (d) (1). A "farm" means a place used primarily for raising crops, livestock, dairy products, poultry, etc., for the market.

(iv) $5,000 for a hotel, apartment building or other residence for six or more families. Note that paragraph (e) (1) limits the amount of maintenance and repair work which may be done in these buildings.

(v) $5,000 for an office, bank, store, laundry, garage, restaurant, theatre, warehouse or other retail or wholesale service establishment, including a frozen food locker plant. Note that paragraph (e) (1) limits the amount of maintenance and repair work which may be done in these buildings.

(vi) $10,000 for a church, hospital, school, college, USO club, public playground for children, for a publicly owned building or group of buildings used for public purposes, for an orphanage or other building used exclusively for charitable purposes, for a military exchange situated on a reservation of the Army or Navy, or for a canal, storm sewer, dam, levee or for a jetty or retaining wall needed for short protection.

(vii) $25,000 for a factory, plant or other industrial unit which is used for the manufacture, processing or assembling of any goods, including logging and lumber camps, or for a bridge, overpass, underpass, tunnel, dock, pier, commercial airport, bus terminal, truck terminal operated by a common or contract carrier by truck, or for a railroad or street railway building or group of buildings, or for a research laboratory or pilot plant.

(viii) $1,000 for any other kind of unit.

* * *

Methods of Obtaining Copper Wire

METHODS by which electricians, electrical contractors and certain types of repair shops may obtain copper wire were outlined May 1 by the War Production Board. The amounts of wire that may be purchased by electricians, electrical contractors and repairmen doing work on electrical appliances, refrigerators and commercial refrigeration and radios is explained in Controlled Materials Plan Regulation 9A. Where more wire is needed in a calendar quarter for the kinds of work permitted, WPB said, a repairman must fill out a CMP-4B application for the additional quantity needed.

Repairmen doing work primarily of an industrial nature, such as generator and motor rewinders, may write to WPB in Washington for special authorization to purchase larger amounts of copper wire.

Since only a limited amount of wire may be purchased under CMP-9A, an electrician or electrical contractor is advised to determine first if a business or activity for which he is to do a maintenance or repair job is listed in the schedules of CMP-5 or 5A. If so, it may be possible to use the customer's maintenance, repair and operating supplies allotment symbol to purchase the wire needed, as described in paragraph (g-1) of CMP-5 and (h) (2) of CMP-5A.

Businesses or activities not listed in the schedules of those regulations, such as hotels, office buildings, restaurants and laundries, may not use the MRO allotment symbol. However, businesses not listed may file a WPB-541 application with the nearest WPB field office for the right to use that symbol. If granted, the procedures of paragraphs

(g-1) and (h)(2) of CMP-5 and CMP-5A, respectively, will apply.

Reports from the field, WPB said, indicate that some confusion appears to exist as to what constitutes maintenance and repair. Wiring of new homes, buildings, and garages, and most wiring extensions or additions are classified as "construction" and are not maintenance or repair work, and the wire necessary cannot be obtained under CMP-9A.

In addition, such construction is governed by WPB Order L-41. Certain dollar limits are set by this order, below which WPB approval is not necessary for the job to be done. Where the construction job exceeds this dollar limit, an authorization must be obtained. Usually, that authorization assigns an allotment symbol to be used to obtain necessary wire. L-41 sets forth the application that must be filed and the place of filing. Ordinarily, the person owning the building, not the repairman, must file.

S S S

Materials Released To New Manufacturers

A NEW directive has been added to CMP Regulation 5 permitting use of MRO ratings to get maintenance, repair and operating supplies and jigs, dies and fixtures for reconversion where a person proposes to start manufacturing a product he is not now making. Any person who is planning to make any product may use the preference rating and MRO allotment symbol (if any) assigned to the manufacture of that product under CMP Regulation 5 to get maintenance, repair and operating supplies and minor capital additions which he requires before actually beginning production of such product.

Any purchase made under the provisions of this direction must be charged against the MRO quota provided in CMP Regulation 5. Persons who are setting up completely new businesses or plants after February 28, 1943, and who were not in business in 1942 are automatically entitled to a quota of $5,000 per quarter under the provisions of paragraph (f) (8) of CMP Regulation 5. This special quota does not apply when an established plant starts producing a new product, since the quota restrictions are on a plant and not on a product basis.

This applies to the matter of extending preference ratings. Under amended Order L-41 a large amount of new equipment may be purchased and installed if it can be secured without priorities.

CMP Reg. 9-A Tightened

CERTAIN refrigeration repair parts have been added to the list of items that may not be bought by repairmen with the AA-3 rating assigned by Controlled Materials Plan Regulation 9-A, the War Production Board announced May 9. As amended, CMP Regulation 9-A, which controls the materials and parts that a repairman may buy, prohibits the use of the AA-3 rating for (1) refrigeration condensing units, (2) low side units (such as unit coolers); and (3) cabinets or other insulated inclosures. The amendment is designed to prevent use of the specified refrigeration repair parts for any purpose other than actual repair work, WPB said. Those parts may now be obtained by a repairman only by extending a customer's rating or by using a rating assigned through an application on Form WPB-1319.

On May 24, Direction 4 of CMP Reg. 9A was revoked. This direction had previously placed restrictions on the use of the V-3 allotment symbol to purchase copper and brass supplies. Its revocation now bases purchases by repairmen of these materials on the quantity and types shown in the regulation—500 pounds in any quarter of the year. The types of copper and copper base alloy materials are shown in Schedule I of the amended regulation. If larger quantities of these materials are needed they should be secured on special application.

S S S

GOVERNMENT CHARGES DIVERSION OF COOLING UNITS

CHARGED with diverting powerful air conditioning units required in the armed services, the Everlast Refrigeration Corp., New York City, and its president, Joseph Scilken, were named in a four-count criminal information filed in Criminal Court recently, according to a news report.

It is charged that the units, weighing from three to five tons, were installed in a beauty parlor, a bar and grill, and private offices of a non-industrial organization without priority orders. The uits weigh from three to five tons and are of the type used in operating and X-ray rooms of service hospitals, in preparation of blood plasma in the tropics, to control temperatures where delicate work is done on B-29 instruments, and decompression chambers at Air Corps training centers. Another count in the indictment charges the defendant with keeping incorrect records of the sales.

NEW POLICIES ON GOVERNMENT LOANS TO MANUFACTURERS

HUNDREDS of small manufacturers, making thousands of essential civilian products, will now be able to obtain loans from the smaller War Plants Corporation under new policies adopted by the corporation, Maury Maverick, chairman and general manager, announced May 28. Small plants also will be able to obtain loans more easily and quickly under the two-fold liberalized program, Mr. Maverick said.

By unanimous vote of its board of directors, SWPC has provided:

(1) Regional loan agents may make loans for war or "essential civilian production" up to $50,000 without awaiting Washington approval, and may make loans up to $100,000 where banks participate for as much as 20 per cent.

(2) All products on the Relative Essentiality List of the Office of Civilian Requirements of the War Production Board, will be considered as "essential civilian production," and manufacturers of these products will be eligible for SWPC loans. Products not under the jurisdiction of the Office of Civilian Requirements but on WPB's National Production Urgency List also will be considered essential, and SWPC loans may be made for their production.

These lists include thousands of items, from wearing apparel and baby carriages to mop wringers and X-ray equipment. The value of all items on the proposed lists represented well over half of the value of all manufactured goods in 1939.

Mr. Maverick pointed out that Public Law 603, which created SWPC, empowered the agency to make loans "to enable small business concerns to finance the acquisition of equipment, facilities, machinery, supplies or materials, or to supply such concerns with capital to be used in the manufacture of articles, equipment, supplies or materials for war or essential civilian purposes."

With small plants almost exclusively engaged in war production, it is estimated that less than three per cent of SWPC's $350,000,000 in loans have been for essential civilian production, Mr. Maverick said.

"Loans for war production will continue to have preference," Mr. Maverick said. "However, as civilian production is increased, SWPC's broadened loan program will assist small plants not needed in war production to switch to essential civilian production."

KRUG PREDICTS HUGE DEMAND FOR CIVILIAN GOODS

A STAGGERING demand for civilian goods of all types both at home and abroad is "the foundation on which America can build a strong transitional economy" as it swings from munitions to peacetime production, J. A. Krug, chairman of the War Production Board, said May 28 in a full report to the board on reconversion.

Pointing to the pent-up demands that will provide a backlog for industrial plant expansion and renovation in this country, Mr. Krug cited statistics to show that in 1944, if goods had been available, Americans would have spent close to $120,000,000,000. In addition, he said, 1943 and 1942 consumers were likewise unable to use their incomes as they normally would have.

The nation's war production chief outlined the policy of WPB in the months to come, saying:

"Although war will be the country's main job, we must do everything possible to provide opportunities for returning soldiers and discharged workers after the defeat of Japan. Toward that end, it is necessary to get rid of regulations and production limitations as quickly as possible and by doing so automatically lift the ceiling on initiative, imagination, and resourcefulness—the very qualities the country will need most if we are to have a resilient and expanding economy after the defeat of Japan.

"In this way, the choice of what and how to produce, buy, and sell—after positive assistance to military and essential war supporting agencies—will be left to the decisions of thousands of manufacturers, wholesalers, retailers, farmers and ultimate consumers, rather than to Government agencies and officials.

"If we were to attempt in Washington to see that every manufacturer, wholesaler and retailer got his exact share of relaxed manpower and materials, we would be lost in a myriad of rules and regulations. We would get in the way of reconversion, rather than speed it."

Out of a total of 650 orders and schedules in effect April 1, 1945, 156 have already been revoked. An additional 83 are expected to be revoked in the next six weeks. And more will be added as the materials situation is eased by further cutbacks in military programs.

In this way, the choice of what and how

(Continued on page 58)

The Installation and Servicing of Refrigerating Equipment

By S. A. Cole
Service Department, Air Comfort Corp.,
Chicago

IT IS frequently true that not the least problem in connection with servicing of refrigeration equipment is to find it and get at it. Unfortunately many jobs have been installed in poor and inadequate locations. For example, it happens too often that compressors must be taken loose from their bases and turned around to give needed clearance for changing the seal. Where equipment is improperly located, maintenance work inevitably is more difficult and is less complete and accurate.

Consider All Factors

All factors should be considered when location is being chosen for refrigerating equipment. First of all, the location should be accessible and should provide sufficient space not only to install, but also to give proper inspection and maintenance. Good lighting and ventilation are important. The place should also be dry and well drained.

If all these factors are kept in mind, the better results from operation of the equipment will be quite worth while. The equipment will have the benefit of more frequent inspection as a result, and depreciation will be at a minimum. Repairs and adjustments will be more quickly made when they are necessary and the cost of maintenance and servicing will be less. A machine cannot be properly serviced when a man must cramp himself into a small space where visibility is poor and tools and parts are difficult to handle.

In the days ahead when equipment is more generally available, all these facts should be kept in mind. Perhaps price competition in the sale of systems will not be so keen and this will bring about better and more reliable operation. In the past, owners sometimes gave great weight in their choice of equipment to the fact that the salesman promised to have it installed in some out-of-the-way place. This places a needless handicap on good equipment and should be avoided at all costs in the future.

Regular Attention

All mechanical equipment should have regular attention, as all engineers realize; nevertheless some owners and operators try too hard to save money and thus bring about faulty operation and waste. It is important to have a regular schedule for draining oil out of the system, followed by cleaning out any sediment which remains. Scale traps should be cleaned regularly in order that they will not become clogged and produce faulty operation. On this point it should be stressed that a good sized scale trap is especially worth while on welded systems.

It is not unusual to find cooling coils in air conditioning systems considerably clogged with dirt. The results of this condition are apparent and need not be described at any length. Many owners of air conditioning systems do not realize the importance of maintaining their air filters in good condition. Yet it is important that they understand something of the requirements for regular attention because they otherwise blame poor results on deficiencies of the system rather than their own neglect. Some instruction of the owner after sale and installation would bring about better attention to the equipment and a gain in customer satisfaction.

Controls

The operation of thermal valves is based on the condition of the refrigerant inside the pipe to which the bulb is clamped. The word "clamped" should be stressed. It happens too frequently that the bulbs are attached rather loosely on the pipe or become loose

A paper presented at meeting of Chicago Chapter, National Association Practical Refrigerating Engineers.

later and bad operation of the control results. These bulbs should be properly placed in the system and should be rigidly fastened so that they have the best possible contact with the pipe or tube. In many cases it would also improve operation to insulate the bulb so that it will not be affected by drafts. Then the operation of the valve will be based solely on the condition of the suction gas.

Only the best quality water regulating valves with removable seats and discs should be used. A good strainer should be installed ahead of them to protect against damage from dirt and grit in the water supply. The valves should be properly placed and should have regular inspection and adjustment to avoid waste of water and power. In the off-season the operating parts should be removed and given a coat of grease to protect them against rust and dirt.

Adequate Instruments

On too many jobs there is a tendency to apply less than the minimum of instruments for automatic systems. Naturally the small to medium size job does not require the elaborate instruments which are justified on large industrial systems. Nevertheless, the customer who insists on trimming costs to bare essentials is shortsighted. For instance, an oil sight glass is worth while and will return its cost in better operation. An oil pressure gauge is important on forced feed oil systems. Worn main bearings may cause the circulating oil to short circuit other parts and give them insufficient lubrication. If there is an oil gauge on the system, it frequently indicates this loss in pressure and the need for attention, but periodic inspection of the main bearings is always advisable.

Exchanger Important

On Freon systems, a heat exchanger is justified by the higher coefficient of performance it produces in the system. In addition, the exchanger eliminates sweating and dripping suction lines and greatly reduces the loss due to heat flowing into the cold suction gas. On many systems where a heat exchanger unit has not been provided, the liquid line can be run through the suction line in order to provide heat exchange and produce the benefits it gives.

Design Features

Proper controls are not always installed on water chillers. As a result difficulties are frequently encountered because these units freeze up in service. Most of these installations are of sufficient size to justify the installation of a thermostat which will prevent continued operation at low temperatures with resultant freeze-up of the equipment.

Hot water and steam coils have been used in heating for many years. Yet it is not too uncommon to be called in on jobs in the winter time where heating coils have been frozen. When this occurs, the damage provides sufficient justification for adequate protection against freezing. Automatic dampers and other protection should always be provided on the outside air so that troubles from freezing of the heating coils will be prevented. The cost of this equipment is minor in relation to the protection it affords.

Duct Heating

On air conditioning systems, any unnecessary heating of the outside air supply or of the cooled air to the conditioned space should be avoided. This heating only adds to the refrigerating load carried by the system and makes control difficult. Inspection of systems now in operation frequently shows that air ducts for outside or cooled air are run through very hot locations.

Typical of this is an air conditioning job where the outside air is taken in at the rear of a basement. The duct to the conditioning unit is rather flat and wide and runs along the ceiling until it drops down near the front part of the basement. Under this duct is the main cooking range of the restaurant, together with other heat producing equipment. It acts as a preheater of all the outside air drawn into the system. On this job the air conditioning unit is well insulated. If logic had been followed in the installation, the outside air duct would also have been insulated the full length to avoid preheating of the air. The same thing is true in the case of supply ducts for cold air which are run through warm non-conditioned spaces.

The adjustment and balancing of air conditioning systems frequently proves rather difficult because damper rods are too light to do the job for which they are designed. Recently we were attempting to balance the air distribution in a restaurant air conditioning system but the results obtained were not satisfactory. Finally several grilles were removed and the dampers were inspected in an attempt to locate the difficulty. It was found that the gauge of the damper rods was too light and while they would pull

the damper to a new position, the rods bent when we attempted to push the damper back.

After a system has been in operation for some time, the dampers do not necessarily operate as smoothly and easily as they did when installed. For this reason heavier, stiffer rods should always be used for operating them. When the installation is made, it is also advisable to place the dampers at full open and full closed positions and mark the rods to indicate these two positions. By reference to these marks, it is then possible to make accurate adjustment of the dampers in balancing the system.

Theoretically, joints in pipe and tubing should not leak, but occasionally a leak develops. In this connection it might be well to review the proper procedure in making up sweat joints with tubing and fittings. First the tube should be inserted in the fitting and marked to show proper depth. Then both the tube and the fitting should be thoroughly cleaned. After cleaning, great care should be used to maintain a clean surface in the area to be soldered. The workman should not touch this area with his fingers after cleaning or while coating with the proper solder flux. The joint should be heated to proper temperature and the solder should be run in evenly to fill the space all around. The mark on the tube will indicate that it is inserted to proper depth in the fitting and remains there during sweating of the joint.

Marking System

The servicing of most of the larger systems would be made easier by marking lines, shut-off valves, etc., where their use is not obvious. When the lines are insulated the workman should be instructed to mark the outside of the insulation to indicate the location of joints. This will save a considerable amount of time later if a leak develops, because the area around the joints can be checked very carefully with the leak detector in a reasonable amount of time. Location of the leak in this way is facilitated and it is not necessary to follow up every foot in the length of the run.

Sometimes when the owner of a system reports unsatisfactory performance, an investigation of the various parts of the job does not indicate unsatisfactory conditions, yet the system just does not operate properly. Then the service man may be puzzled until he checks the size of the various parts of the system. As a result he may determine that the coils and condensing unit are not properly proportioned.

Where a condensing unit of adequate size to carry the load is installed along with a coil of low capacity, good operating results cannot be obtained. Despite the size of the condensing unit, the load will not be carried properly, the compressors will short cycle, the suction pressure will be too low and the relative humidity in the refrigerated space will be too low. This matter of proper proportioning of a refrigeration system is not new and the results of faulty design are not surprising, yet it is true that such conditions are encountered occasionally and designers should keep these facts in mind.

Discussion of Valve

Theoretically all machinery is installed and operated in proper manner so no difficulties in operation should ensue Because this is not always true in practice, engineers are required to analyze trouble and apply remedies. Discussion of experiences among engineers is then instructive and helpful in improving methods of both installation and operation.

Frequently the same subject is covered more than once but that seems better than glossing over details. Also, it can be distinctly helpful to new members of N.A.P.R.E. who wish to increase their knowledge as rapidly as possible. For that reason the present discussion covers problems which are not new. Yet it is justified by the fact that they continue to be encountered in the refrigeration field.

Installation Features

The importance of equalizer lines was not recognized when many jobs were installed in earlier years. It is not uncommon now to find multiple compressor jobs without them, although oil equalizer lines are needed where two or more Freon machines are operating together. Without these equalizers, one machine may rob the others of oil. Two lines should connect all crankcases of the machines: one below oil level to permit flow of oil from one compressor to the other, and one equalizing line above oil level to complete the circuit.

Equalizing lines are also important on condensers and receivers or for condenser-receivers where they are installed in multiple. This is the only way to insure that

liquid refrigerant will not accumulate in excess amounts at one or two points. While we are on the subject of equalizing pressures, it would also be well to mention the arrangement of suction lines for equal distribution of the suction gas to all compressors. This is especially important with refrigerants of greater density. A check of multiple compressor installations where proper thought has not been given to this subject indicates over-work of some compressors while others do not carry their share of the load. Somewhat equal running time is also advisable. To obtain this, there should be a regular schedule of changing controls so that first one compressor and then another will carry the base load.

Water Regulating Valves

As materials become more plentiful, thought should be given to improving installations of water regulating valves. It seems apparent that better results would be obtained on larger jobs by installing two or more smaller valves rather than one large water regulating valve. The smaller valves can be set for a smaller operating differential. Furthermore, they are more likely to close at the proper pressure and not leak.

These water regulating valves do need occasional inspection and maintenance and sometimes have to be replaced. For this reason hand valves should be placed on both sides of the regulating valve and a hand regulated by-pass around the automatic valves has proved valuable. A stop valve is also worth while on the pressure connection which operates the valve. Because of this lack, it frequently is necessary to cut out a section of the pressure tube and then replace it after the valve is repaired. Generous use of unions pays off in lower cost maintenance. Without them one job of removing a water regulating valve for service may cost more than complete installation of unions.

Vibration and Leaks

While we are discussing lines and connections, it might be well to mention again the need for proper support of lines to avoid vibration. When a line is not properly supported and is allowed to vibrate constantly, it will eventually begin to leak.

At very rare intervals, vibration in the lines may be caused by other factors than inadequate supports. On one well-remembered occasion the lines continued to vibrate near the machine although they were well supported. Several people had inspected the job to solve the mystery but the vibration of the lines continued until the compressor bolts were tested and found to be loose. After the compressor was tightened down on its foundation, the vibration ceased.

When leaks do occur in refrigerant lines they have to be located and repaired. Sometimes this can be a very lengthy and exacting job if it is carried to a successful conclusion. For this reason it might be well to advise the procedure which begins with testing of the vulnerable spots first. These are the relief valves, seals, flare connections, and special vibration points. Then the checking would proceed to flange and sweat connections, and the insulation would be pierced where it covers connections and elbows and other fittings. This may appear drastic or unnecessarily complicated, but sometimes it is the only way to locate a leak. On other occasions it may be necessary to pump the system down and shut off the compressor and receiver. Then carbon dioxide is added to the system to bring the pressure up to around 180 lbs. This increases the flow through leak points and assists in their location.

The matter of providing space for inspection and maintenance of equipment has been mentioned before, but it will continue to be worthy of note because space frequently looks larger on a layout drawing than it seems to the man who has to crawl around to reach the equipment. Sometimes a part of the installation has to be taken out in order to service another section because the two parts have been placed too close together. For instance, heating coils have been taken out to provide access to cooling coils. It certainly would be much better to provide work space between these coils and access doors in the housing in order to reach them.

Inspection and Adjustment

One special problem of the wartime has been the scarcity of good V-belts. Because they are difficult to obtain, they should be conserved. Because the next set may not be as good as the present set, they should not be allowed to wear away rapidly through misalignment. Alignment of the pulleys should be checked occasionally. Sometimes pulleys are out of line because adjustments in the measurements did not take into ac-

count the difference in thickness of the outer edges of the pulleys. In other words, the outer groove on all pulleys is not the same distance from the outer edge and this fact should be considered when alignment is measured.

At the present time belts are more inclined to stretch after they are placed in service. It is a good idea to watch a new set of belts closely for the first hour, and then give them frequent inspection throughout the first 24 hours of operation. This permits compensation for stretch in the belts before it has damaged them.

Correct Rotation

Electricians who work on refrigerating and air conditioning equipment should be cautioned to maintain operation of motor equipment in the same direction. We do occasionally find that motor leads have been switched and compressors or fans are running in reverse. Of course refrigeration is not the only field in which incorrect rotation of equipment can have bad consequences, but it is one place where the matter should not be overlooked.

On starters and electric controls, sanding is not advised to smooth up contact points. They are usually plated and if they become pitted in service, they should be replaced. Wearing away of the starter contacts is considerably reduced if all of them close at the same time. The adjustment of these should be checked occasionally along with the overload protection to insure proper operation.

Inaccurate gauges and thermometers are frequently found in use. This gives grounds for repeating the suggestion that a master gauge and standard thermometers should be used at least once a year to check these instruments in the plant. An inaccurate gauge is worse than no gauge at all.

Charging Methods

While we are on some of the old familiar stories, we might discuss charging methods. Where a known amount of Freon is to be added to the system, it is suggested that it be charged directly into the receiver. Assuming that the compressor can be shut down for a few minutes, the head pressure can be lowered by maintaining water circulation through the condenser or by opening the by-pass. Many men prefer to have a pressure gauge connected in the charging line and this does indicate the progress of the operation more accurately.

With the charging connection in place, the valve on the drum is opened, followed by the valve to the receiver. Heat can be applied slowly but in the liquid area of the drum only. The word "slowly" should be underlined and the warming of the drum should be checked frequently with the hand. It should never be heated to a temperature higher than the hand can endure. Too frequently refrigerant drums are returned with large burned spots on them to indicate that they have been heated up to several hundred degrees. This is dangerous and unnecessary and damages the drum.

Exchange Good Ideas

The amount of refrigerant discharged through leaking relief valves reaches a high total each year. Where the discharge from the valves is carried up some distance, a leak may go unnoted for a considerable time. Recently a method of preventing this was suggested and it looks good. A low pressure rupture member is placed in the discharge line from the relief valve. Between it and the rupture member, a small by-pass is taken off and run to a low pressure alarm set at perhaps 20 lbs. If the relief valve opens or leaks, pressure is built up to operate an alarm bell or signal light before the rupture member breaks and reduces the pressure in the discharge line. This method of conserving refrigerant appears to be very good. It is another one of those ideas which discussion of our mutual problems and operations brings out.

Records

Maintenance operations would be facilitated and general operation of the equipment would be improved if better records were kept on each piece of equipment. As a minimum, a card should be kept for each compressor. This card should show the serial number and size of the compressor, the belt number and size, the refrigerant used, and probably brief specification of the oil. Space should be provided on the card to make a notation of the date and the brief details of service or maintenance operations done on the compressor. With this information at hand, all maintenance and repair work is placed on a much better and more accurate basis and better operation of the equipment results.

(Continued on page 58)

How to Submit Data

By R. L. Hendrickson
Associate Editor, Refrigeration Service Engineer

FOR many years, manufacturers and other sources of supply have been answering the service engineer's problems by guessing what he wants in the nature of information. With the limited data generally supplied by the service engineer, remarkably accurate and complete answers have been forthcoming.

When the manufacturer, engineering firm, or supply house receives a comprehensive letter outlining the problem and including all the details, it usually requires very little effort to supply a complete answer. Here are some typical examples of questions asked that leave the most important points to the imagination of the one attempting to give an answer:

"I have a job to build a cooler 8 feet x 10 feet for a company here in town. I figure on using a one half h.p. unit that I have on hand to cool it. Will you please figure out the load and tell me if this unit will do the job?"

The questions that immediately come to mind when an answer is to be given are:

Information Needed

1. What is the height of the cooler?
2. What wall construction is to be used?
3. How thick are the walls to be made?
4. What temperatures are to be maintained?
5. What is the outside temperature surrounding the cooler?
6. What and how much product is to be stored?
7. What is the product temperature when entering the cooler?
8. What is the average daily product moved through the cooler?
9. How often is the door opened?
10. What is the make and model number of the condensing unit?
11. What is the diameter of the flywheel and motor pulley?
12. Is the unit air or water cooled?
13. What type of evaporator is proposed?
14. What refrigerant is to be used?
15. What is the water temperature?

The refrigeration service engineer has graduated into a professional field engineer in the eyes of the public. He no longer need be the "Jack-of-all-trades" individual who a few years ago was thought of as a necessary evil in the refrigeration industry. In order to maintain this prestige, it is going to require him to continue to improve; keeping abreast of more than just the service job to be done today or tomorrow. If he will keep in mind the clear picture of obtaining all the facts on a refrigeration installation then assembling this data for an analysis, his ability to service refrigerating machines will likewise improve.

If the original problem includes these pertinent facts, then a reasonably close estimate can be made on the refrigeration load. Suppose the question is stated as follows to show this information:

The Problem Restated

"I have an order to build a cooler 8 feet x 10 feet x 9 feet high for a grocery and meat market store. The grocer expects to use the cooler to store 3 crates of lettuce, and about 300 pounds of other vegetables that he buys each morning from the wholesale market. These products will reach the cooler at about 65 degrees. The butcher expects to have delivery of 300 pounds of beef and 100 pounds each of pork and lamb twice a week. This will be at about 55 degrees when delivered. I propose to build the cooler with 4 inch corkboard walls surfaced with ¼ inch Masonite on the outside and ¾ inch cypress inside. The proper vapor barrier will be installed. The store owner wants to maintain a temperature of 34 degrees and the temperature surrounding the cooler will be at a maximum of 95 degrees.

The cooler is to be used for storage only, as adequate display cases are being installed. I have a one-half horsepower air cooled

"Adroit" machine model M50 designated for use with methyl chloride and running at 390 r.p.m. Will this unit handle the load? Please give your recommendation on the size and type of evaporator to use."

With the above information, the engineering department of the manufacturers or any one familiar with figuring refrigeration loads can present very comprehensive information and make definite recommendations.

Another Question

Here is another kind of question that requires a high degree of mental gymnastics to answer:

"I have been servicing a locker plant that has been having trouble freezing the meats in less than 18 hours in the freezer. Do you think the three horsepower unit is big enough for the job?"

Here the service engineer has failed to complete the picture with the following information:

1. The number of lockers and size of the locker room.
2. The temperature of the freezer.
3. The temperature of the locker room.
4. Quantities of product frozen per day.
5. Method of freezing (contact or in baskets placed on the coils).
6. Size of freezer.
7. Running time of machine.
8. Suction pressure.
9. Head pressure
10. One unit for entire plant or separate units on high temperature rooms.
11. Condition of the evaporator.
12. Any alterations that may have been made on the original installation.
13. Type and thickness of insulation.

Had the question stated these facts it would be possible to give some definite suggestions for correcting the trouble. Presenting the entire picture by giving all the facts, the question might be stated as follows:

Presenting All Facts

"I have been servicing a 200 locker plant that has been in service five years. Another 40 lockers were added last year making 240 in all. The locker room inside measures 15 feet by 23 feet with the freezer built into one corner. The freezer measures 5 feet wide by 7 feet long inside. The locker room ceiling is 9 feet. Plate type evaporators are used in the locker room and iron pipe coils in the freezer. There are twelve 12 inch x 144 inch plates and about 150 feet of one inch iron pipe in the freezer. The locker room is insulated with 6 inches of corkboard and the freezer has 8 inch corkboard walls. The locker room seems to hold at 5 degrees above zero but the freezer is often at 5 degrees above zero when meat is being frozen. It requires 16 to 18 hours to freeze the meat solid. About 400 pounds are processed each day and placed in the freezer in wire baskets. The freezer and locker is refrigerated by a 3 horsepower water cooled low temperature "Joblow" condensing unit.

The curing room, ageing room, and chill room are refrigerated by a 2 horsepower water cooled medium temperature "Joblow." Blower type coils are used in these rooms. The coils are of the automatic defrost type using electric heating elements to accomplish the defrosting. This part of the locker system seems to be very satisfactory and well engineered for the job.

I have checked the expansion valves and observed a minimum frost on the coils and plates. The condensing unit runs most of the time operating at about 5 pounds suction and 125 pounds head pressure using F-12 as the refrigerant."

Drawings and Forms Help

Drawings of the refrigerated space and layouts of the system are very helpful in giving details that are important to the engineer who must make recommendations for improving the operation of a system. They are also important when a request for designing the system is received by the factory, distributor, or jobber who is required to specify the equipment to be used. Drawings should be complete with dimensions and show the relative positions of all the parts.

It would be well for the service engineer to prepare a regular form incorporating all of the things that should be known about each job. Such a form could be used to advantage on either commercial service, installation, or preliminary survey work. Quite frequently, putting down all the details in writing will crystallize the problem to a point where the answer will not be difficult to work out without assistance. The service engineer is a specialist much like the doctor. As a specialist, he must usually follow a well defined analysis procedure to properly diagnose the trouble. This analysis procedure is just as important in design and installation of a plant as it is in service work.

(Continued on page 58)

Construction, Operation and Servicing (*Article Seven*)

The Coldspot Electric Refrigerator

This is the seventh of a series of articles giving detailed servicing instructions on Coldspot Electric Units, compiled from the Service Manual issued by Sears Roebuck & Company, makers of the Coldspot Unit and is published with their permission. This is the first authorized publication of this material and will prove of inestimable value to the thousands of service engineers all over the country who daily come in contact with these refrigerators.

GENERAL ELECTRIC (GE) THERMOSTATS

GENERAL ELECTRIC (GE) Thermostats have been used on most Coldspot units. There have been several different models used which were very similar in most respects.

General Construction

The only positive way to identify a G.E. Thermostat for its application to the proper unit is by referring to the Sunbeam part number which is printed on the cover of the thermostat. The outside appearance of the various types is so similar that identification is difficult. The factory (G.E.) model number will identify the thermostat if the number on the original one is known. The difference in various features makes it very important to use the exact replacement to match the voltage and cycle of the current, the motor (when the thermostat includes an overload cut-out), and the face plate of the evaporator.

Differential

G.E. Thermostats have been made with 3 differentials at various times for Coldspot units. It is important to use the correct replacement because the differential cannot be changed in the field.

A 10° differential G.E. thermostat was made to replace the obsolete Penn Thermostat and is the only one supplied for such units.

A 12° differential G.E. thermostat was made for standard units from 1933 to 1937 inclusive and flooded system units in 1940-41.

A 11° differential G.E. thermostat was made for all units with the U-shaped dry evaporator from 1938 on.

It is not feasible to check the differential of a thermostat by the frozen-in thermometer method on the unit. The thermometer on the lower shelf near the front of the evaporator does not represent the temperature at the sensitive bulb while the unit is running. On the dry expansion evaporator, the coldest part of the tubing is near the expansion valve and the warmest part is at the suction end at any given time during operation.

When the unit cuts-out, the evaporator warms up gradually until the entire evaporator becomes the same temperature. Therefore, the frozen-in thermometer does represent the *cut-in* temperature at the sensitive bulb. Bear in mind that *the difference between the cut-in and cut-out temperatures at the frozen-in thermometer is not an indication of the thermostat differential.*

If the cut-in temperature at No. 5 position is correct for the unit and the unit does not cut-off before or shortly after the frost appears above the lid with the Cold Control at No. 9 position, it is usually due to a "wide" differential. The thermostat should be replaced.

Determining Thermostat Temperature

A more accurate but more difficult method of checking the differential is to freeze-in the thermometer *at the sensitive bulb* or freeze-in the sensitive bulb on the evaporator shelf next to the frozen-in thermometer. In either case, the cut-in and cut-out temperatures indicated by the thermometer will be the actual temperatures at which the thermostat operates.

Range

The range control (or "cold control") knob on the G.E. thermostat has always been divided into at least nine positions. On some types, there is a "quick-freeze" position in addition. Turning the dial from one position to the next represents a change of one degree (1°) in the range of adjustment.

The dry expansion system thermostat should always be adjusted for proper cut-in with cold control on No. 5 position. The cut-in temperatures are 27° for wrap around type evaporator, and 28° for "U" shaped evaporators. Turning the control to No. 4 will change the cut-in to 28°, No. 3 will be 29°. Turning in the opposite direction the cut-in temperature is lowered 1° per number on the dial until at No. 9, it will be 23°.

If the cut-in temperature is not correct for the type of unit (old style or U-shaped evaporator), the thermostat must be readjusted by the following method:

1. Freeze-in the thermometer on the lower evaporator shelf above the second coil from the front as described under Expansion Valve Adjustment, Article five in April issue THE REFRIGERATION SERVICE ENGINEER.

2. Remove all ice cube trays from evaporator and allow unit to cycle normally with the thermostat *on No. 5 position.*

3. Leave the cabinet door closed until the unit starts, then open and read the thermometer immediately. The reading at that time represents the cut-in temperature of the thermostat (unless there is an air leak into the cabinet or a leaky check valve, either of which would cause an erroneous reading).

4. If the cut-in temperature is not correct, turn the control knob to a *higher position* to lower the cut-in or to a *lower position to raise the cut-in temperature.* (Each position equals 1°). For example: If the thermostat reads 29° just after the unit cuts in, the knob should be turned to No. 7 and the test continued as follows:

5. Allow the unit to cycle again and read the thermometer immediately after the unit starts. The cut-in temperature should be correct at the new position of the range control. If it is not, change the setting, the proper number of positions and repeat the check.

6. When the cut-in temperature is correct, it is merely necessary to remove the knob and *without turning the shaft,* replace

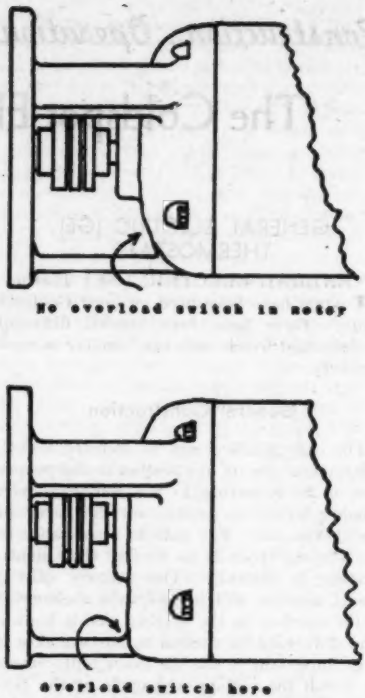


Fig. 41—Location of motor overload when thermostat is not equipped with thermal cutout.

the knob so that it indicates No. 5 position. Earlier types of G.E. thermostats have a removable plug in the center of the control knob which conceals the screw that holds the knob on the splined end of the control shaft. This small disc can be removed with a sharp knife or pin. While holding the knob on the shaft, loosen the screw enough to allow the knob to be pulled away from the splined collar on the shaft. *Do not turn the control shaft* from the proper position as checked above, (5). Replace the knob so that the pointer indicates No. 5 position; tighten the screw, and replace the plug.

The procedure is the same for all G.E. thermostats. The only difference is the actual cut-in temperature for the different types of units and the design of the knob. Some models have push-on dials which slip over a flat-sided shaft knob. On these, the plug to be removed is in the flat-sided shaft knob. Care should be taken to move the splined control knob through the proper de-

gree of rotation because the dial which has been removed, carries the position number scale.

Motor Overload Cut-Out

Some G.E. thermostats include a thermal overload protective device which opens the circuit if the motor draws excessive current.

Not all G.E. thermostats have an overload device. The easiest way to determine if the overload is in the thermostat or in the motor is to notice whether the motor has a projection on the end bell under the coupling end of the shaft, Fig. 41. Such a projection, houses a bimetal overload switch in the motor in which case one is not provided in the thermostat. The action of a bi-metal overload device is described in Motors, Section C.

Sensitive Bulb and Bellows

G.E. thermostats use both straight and coiled sensitive bulbs. This sensitive bulb is held in position between the separator bulb and back plate in the evaporator by a clamp. It *must be in metal to metal contact* for its entire length with the separator bulb to respond to the temperature there.

RANCO THERMOSTATS

Two types of Ranco thermostats are used on the Coldspot, distinguished by having either one or two control knobs.

Ranco "One Knob" Control

The mechanical action of the "One Knob" Ranco is similar to the G.E., i.e., it is actuated by a sensitive bulb and bellows assembly. The mechanism itself is quite different in design and operation.

The range control, "defrost" position and "off" position are all on one knob. The control knob rotates a special shaped cam which is in contact with a pin on the main bellows spring adjusting plate. The rotation of the cam increases or decreases the pressure of the spring against the bellows and determines the range of the thermostat. The "off" position of the knob forces the bellows spring with sufficient pressure to open the circuit even if the sensitive bulb temperature is high above normal room temperatures.

The defrost position of the knob adjusts the tension on the bellows spring to cut in

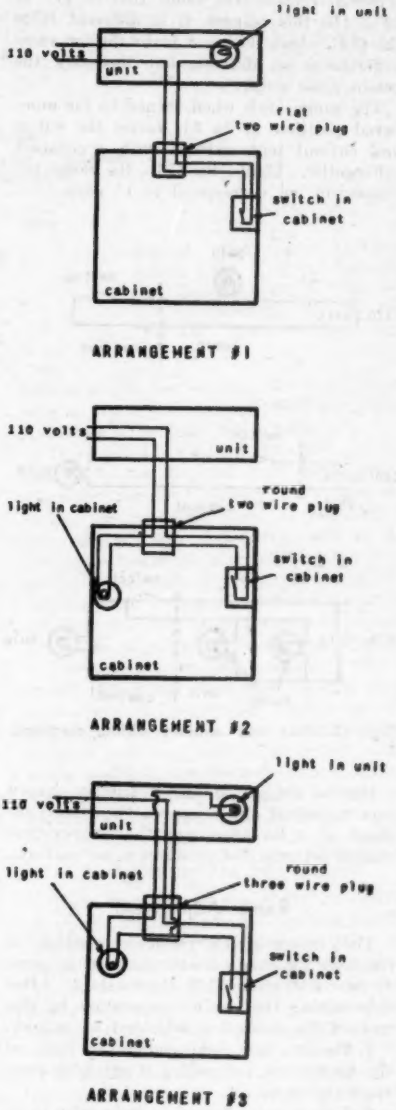


Fig. 42—Various hook-ups used in the wiring of the Coldspot cabinet and unit. Note that three different arrangements are used.

at about 45° at the sensitive bulb. The differential remains the same, that is, 11° or 12°. (In this respect, it is different from the G.E. which does not maintain the same differential on defrost, but increases the cut-in point only).

The range knob when turned to the numbered position (1 to 9), varies the cut-in and cut-out temperatures with a constant differential. Unlike the G.E., the range positions do not correspond to 1° each.

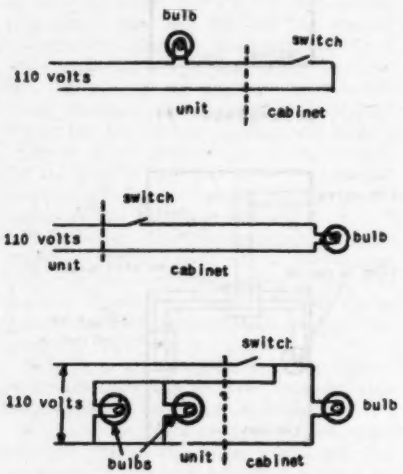


Fig. 43—Unit and cabinet wiring diagrams.

Due to the use of an irregularly shaped cam to adjust the range on the Ranco instead of a threaded rod, the temperature change between dial positions is not uniform.

Range Adjustment

The frozen-in thermometer method of checking the cut-in temperature is the same as described under G.E. thermostats. After determining the cut-in temperature by this method the control is adjusted as follows:

1. Remove the right end cover plate of the thermostat by pulling it straight away from the case.

2. Use a screwdriver to turn the brass adjusting screw which is found at the end of the bellows spring cup. Turn to the left (counter-clockwise) to raise the cut-in. Turn to the right (clockwise) to lower the cut-in. One turn *changes the range about* 6° F. Changing the range adjustment screw changes the range for all dial positions including "defrost."

Do not attempt to change the differential adjustment screw or the bellows adjustment screw. These screws are factory-adjusted to the individual control and *cannot be successfully adjusted in the field.*

PENN THERMOSTATS

Penn Thermostats were used on the first Coldspot units manufactured in 1930-31. They are no longer available and have been superseded by a special G.E. thermostat which is supplied with 10° differential for replacement purposes.

CUTLER-HAMMER THERMOSTATS

The Cutler-Hammer thermostat was used on units with Sunlight Clutch Motors, and like the motor, has been discontinued. The Cutler-Hammer is adjusted in the same manner as the G.E. thermostat and no internal adjustments can be made on the differential or overload.

They will not be discussed here because a very few were sold and many of these have since been changed to G.E. thermostat and motors.

AUXILIARY EQUIPMENT

THE cabinet lighting system of the Coldspot is connected to the motor power cord by means of a plug-in connector. The plug is attached to wires from the motor terminal board. A receptacle is fitted into the cabinet.

In the wiring diagrams, the plug-in connection is indicated by the dotted line, Fig. 43. Wiring to the left of the dotted line is included with the unit; that to the right is in the cabinet.

Either a round or flat plug is attached to the cord from the motor. If the plug is flat, there is a bulb in series with the cord as in Arrangement No. 1 (Fig. 42). If the plug is round and has two contacts it carries full voltage and is used in circuits like Arrangement No. 2. If the plug is round and has three contacts, it carries full voltage between two contacts and a switch wire for the bulb in the unit as in Arrangement No. 3. In the preceding sketches of various wiring arrangements, the motor and thermostat connections are not included. The sketches do show the physical distribution of light switch plugs and cords, Fig. 43.

In general the pair of wires attached to

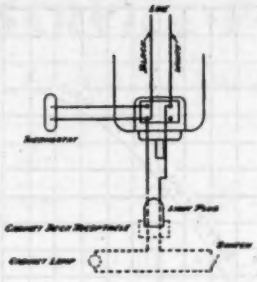


Fig. 44—Wiring diagram for 1939 models 19200, 19400, 19401, 19402, 19403, 19404, 19500, 19501, 19502, except 32 volt.

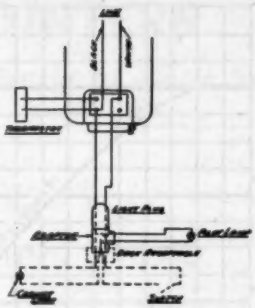


Fig. 45

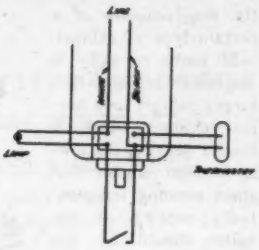


Fig. 46. Light switch for 1935 models T, W, Y, Z (lid assembly No. 26515); 1936 T5, W5, W6, Y5, Z5 (assembly No. 27115); 1937 C73 (assembly No. 27270).

round plugs are connected to the line cord terminals on the motor terminal board, Figs. 44 and 45. When a flat plug is used, one wire is connected to one power wire terminal and the other wire is connected to a "dead" terminal to which is also connected one of the wires from the bulb. The other bulb wire is connected to the other power line terminal, Fig. 46.

OPERATION

Efficient Refrigeration

The three most important considerations in refrigeration operation are closely allied and can be discussed together to avoid repetition. They are *capacity, cost of operation* and *freezing speed.* A properly adjusted Coldspot combines these three factors in its operation without over-emphasis on any one of them. The Coldspot can be adjusted *within a certain range* to provide maximum capacity at a maximum freezing speed. These two qualities (capacity and freezing speed or temperature) vary inversely with one another in the dry expansion system. Perhaps the best way to portray this relation is by a chart.

In the graph (Fig. 47) the horizontal axis is the evaporator temperature (freezing speed) and the vertical axis is refrigerant flow (capacity). From the operation of the automatic expansion valve it can be seen that when the valve is adjusted to open readily *more refrigerant will flow but the temperature will be higher* because less vacuum will exist. If the valve is adjusted to maintain a higher vacuum, the temperature will be lower but the amount of refrigerant flowing will be less (lower capacity).

These two functions of the valve are designated by the diagonal lines on the graph. Consider the line marked "Refrigerant." When the expansion valve is adjusted to open easily more refrigerant will be admitted to the evaporator and hence the capacity of the unit to remove heat is greater. As the valve is adjusted toward the closed position, the flow of refrigerant is reduced hence the capacity for heat removal is less.

Now, consider the line marked "Temperature." When the expansion valve is set to open easily, the evaporator temperature will be higher (warmer) because less vacuum (higher pressure) exists. If the expansion valve is adjusted toward the closed setting, the evaporator will be colder because the higher vacuum reduces the boiling temperature of the refrigerant.

Adjusting For Efficiency

These two lines on the chart intersect at one point which will be the point of greatest efficiency, capacity (refrigerant flow) and temperature (freezing speed) considered. If the valve is adjusted in either direction from this point, there will be a gain in one quality with a corresponding loss in the other quality.

It should now be obvious that the range of expansion valve adjustment given for each type of unit is computed to surround this point of highest over-all efficiency. A small range is allowed to permit adjustment to suit the customer's particular needs or

the requirements of a certain type of cabinet.

If more capacity is desired to refrigerate a larger cabinet or a normal cabinet which is loaded heavily, the lower vacuum (higher constant running temperature) setting of the valve should be approached.

If more speed is desired to freeze ice cubes or desserts but with reduced capacity, the higher vacuum (*lower constant running temperature*) setting of the valve should be approached.

Do not, in any case, exceed the limits of the recommended range of adjustment.

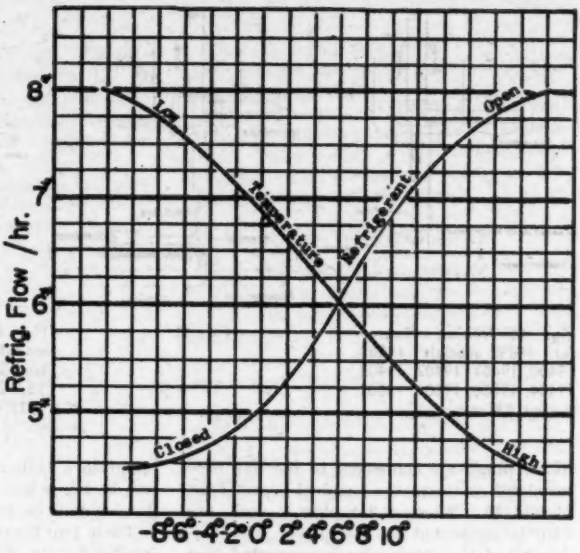


Fig. 47. Graph showing evaporator temperature and refrigerant flow

Thermostats

When the expansion valve has been properly adjusted the only other control of the quantity and degree of refrigeration is the thermostat. This is the only control by which the customer can vary the operation of the unit to suit conditions of use.

The thermostat is merely a temperature-operated switch to start the motor when the evaporator temperature rises to a certain degree and stop the motor when it has cooled down to another temperature.

The evaporator is designed so that a certain differential (difference between cut-in and cut-out temperatures) will provide the proper amount of refrigeration under normal conditions.

The thermostat setting is always checked by the frozen-in thermometer method at the No. 5 position.

A small range in the proper cut-in temperature is given for some units. There is only one normal cut-in temperature at No. 5 position for most units (27° for all except U-shaped, dry evaporators which are 24°). With the thermostat set at the proper cut-in temperature, the range from No. 1 to No. 9 is adequate to cover most variations in room temperature, food load, and ice cube and dessert freezing demands.

Each number on the scale represents one degree Fahrenheit change in the range. Therefore, with the No. 5 position cut-in temperature at 27° the other positions are:

No. 9....23°	No. 6....26°	No. 3....29°
No. 8....24°	No. 5....27°	No. 2....30°
No. 7....25°	No. 4....28°	No. 1....31°

At No. 1 position there is liable to be defrosting at the top of the coils in the evaporator under excessive food loads, high room temperatures or if an air leak exists.

Freezing Speed

The No. 9 position (or quick freeze on some models) is intended for use in freezing ice cubes quickly or in freezing ice cream or frozen desserts. At this position all parts of the evaporator are kept below 28° and most of it will reach the lowest constant temperature while the unit runs.

A metal-to-metal contact between the cube tray and the evaporator is essential to fast freezing. Any ice or frost on the shelf should be removed and the shelf or bottom of the cube tray dampened to provide metal-to-metal "frozen-in" contact for greatest heat flow. Frost or ice between the tray and shelf acts as an insulator and reduces the heat flow.

(To be continued in next issue)

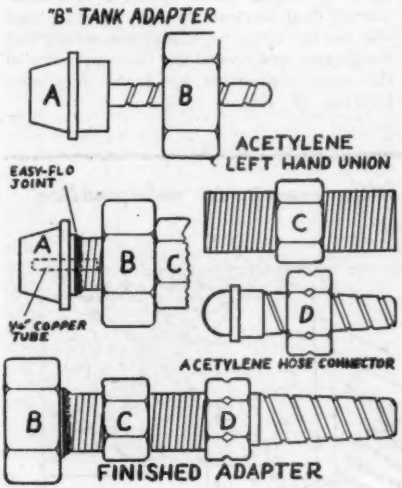
SERVICE POINTERS

Practical Solutions of Your Service Problems

EDITOR'S NOTE: Here are additional contributions submitted in the Service Pointers Contest. Others will appear in the next and following issues.

PREST-O-LITE TANK ADAPTER

I HAVE found this adapter very handy at times when it has been necessary to change from the Prest-O-Lite "B" tank to the larger acetylene tanks used by welders. It is particularly handy when the "B" tank is exhausted while on a job some distance from the shop or source of supply for a refilled tank. Most country garages have welding equipment that uses the larger tanks of acetylene.



The connector is made by removing the tube from the "B" tank union and inserting a piece of ¼ copper tubing in its place. With the nut on the part, insert the other end of the tube into a regular acetylene hose connector and silver solder together. The acetylene hose connector and left hand nut is assembled on the end of the hose and connected to the other end of the hose connector. The drawings show the procedure to follow.—*Submitted by Frank R. Wright, Vancouver, B. C.*

CONTROL REMODELING

IN A great many cases, the operating mechanism of high pressure cut-out, low pressure switches, basement sump pump switches are in good working order but the contacts are burned. All of these can be made to operate with a high degree of satisfaction by rearranging the toggle mechanism to mount a mercury tube contactor. Either the glass tube or Jefferson metal tube can be used. Jefferson tubes have a higher amperage capacity than do the glass tubes.

Many old style controls are particularly adapted to this change in contact method. In most cases a quick break action can be worked out by soldering a tube mounting clip onto another strip attached to the former contact lever.

The same scheme can be worked out by using a regular wall type toggle switch where the controlling force is a float such as is used on sump pump installations. The bakelite covering the handle is broken off and a suitable arm is soldered to the switch lever.

When using glass mercury tubes, it is easy to determine how they should be mounted to make and break the circuit. Jefferson metal tubes must be mounted in the correct indicated position for satisfactory operation.—*Submitted by Glenn Fee, Knoxville, Iowa.*

* * *

FLUIDS FOR AIR CONDITIONER FILTERS

RESEARCH at the laboratories of the Glycerine Producers' Association indicates that a glue-glycerine-water solution makes a good moistening material for filter bases such as are used in heating and air conditioning systems. A solution of 0.2 per cent glue in 50 per cent glycerine was found satisfactory. This mixture has a great advantage over oil-base treatments in that when the filter becomes dirty and clogged it can easily be washed clean with cold water and a fresh solution applied. Aside from the elimination of fire hazard, such treatment with the aqueous glycerine-glue mixture results in a substantial economy over the common throw-away units.

MOISTURE IN GRUNOW

WATER floats on Carrene and will cause trouble with or without an anti-freeze. Any low side leak may let moisture get into the system, whether air enters or not. A small amount of vaseline or oil used on the flares and threads will help keep the connections moisture tight.

Water can accumulate in the condenser, float tank, or in the evaporator if the Carrene charge is low. A unit may work fairly well until the Carrene charge is brought up to normal and then start having trouble, if moisture is in the system. The compressor screen, the condenser, or capillary tube may plug up with the material carried by the water. This sludge is not eliminated by any of the known anti-freeze chemicals, therefore the system will have to be disassembled and thoroughly cleaned when it is present.

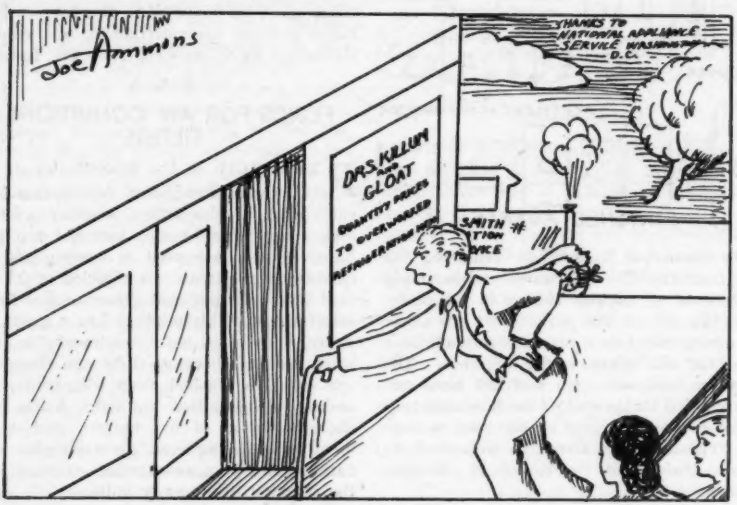
An anti-freeze will prevent ice from forming in the capillary tube but it will not prevent sludge from forming and plugging some part of the system. Do not use an anti-freeze in a Grunow. The only remedy for moisture trouble is to clean the system, install a large dryer, and check for leaks.—*Submitted by C. L. Carter, Pueblo, Colorado.*

COMPRESSOR SCREEN PLUGGED

WHILE servicing a 1935 Super model Frigidaire, I found the evaporator frosted but not cold enough. The suction gauge reading at the service valve indicated the lowest pressure as 4 pounds. The system contained sufficient refrigerant and had no air in the high side. Compressor valves were holding so I removed the compressor for inspection. I found the screen in the suction port leading to the crankcase plugged. This was causing all the trouble. The compressor was operating on a much lower pressure than was indicated.

To check this screen without removing the compressor head, a compound gauge can be installed at the compressor crankcase oil filler plug. Install another compound gauge at the suction service valve and note that the pressures are the same while the machine is running. If the screen is partially stopped up, a reduced pressure will be shown by the crankcase gauge. If the float valve is causing the evaporator to remain warmer than normal, the running symptoms will be the same as a plugged screen but the gauges will record the same pressure in this case.—*Submitted by Archie Keefover, Grafton, W. Va.*

That's Smith—he's made a little money in refrigeration service the last couple of years!

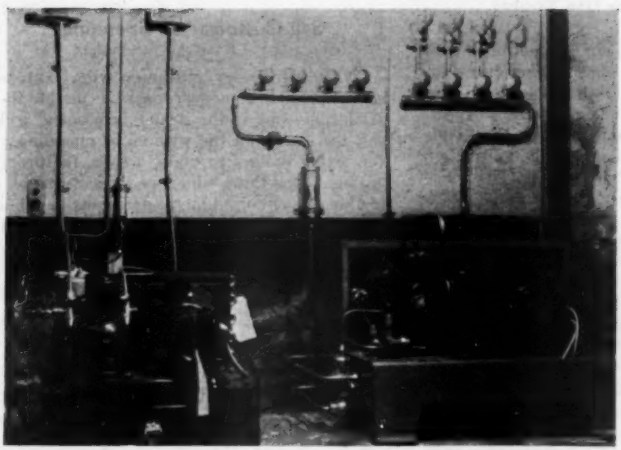

Joe Ammons
THANKS TO NATIONAL APPLIANCE SERVICE WASHINGTON D.C.
DRS. KILLUM AND GLOAT
QUANTITY PRICES TO OVERWORKED REFRIGERATION TYPE
SMITH

Commercial Selling

How to increase business by doing a more effective job of selling

Showmanship Will be Needed to Sell Refrigerators in Postwar Market

By Robert Latimer



A photograph of a neat installation job can be used as visual proof to back up sales arguments. Here is a good example of such a picture showing condensing units and headers and fittings well arranged and installed.

REFRIGERATION contractors and installation men who feel that the postwar market will be so crammed with clamoring buyers that there is no need for promotion or exhaustive selling will be making a serious mistake, according to W. G. Abbott, head of Weir Refrigeration Service Company, Fresno, California.

Mr. Abbott, who is a veteran of seventeen years experience in all types of commercial refrigeration, was recently released from the Army after a long period of service, and returned immediately to refrigeration sales and service, which he feels will be subjected to greater expansion during the next few years than at any time in its history. Currently heading the Fresno unit of the Weir concern, he is already making plans for educational promotion among hundreds of prospects in the San Joaquin Valley—promotion every bit as intensive and complete as that prior to the war. He deplores the attitude of sales organizations who feel it won't be necessary to spend money for advertising

and promotion after the war—feeling instead that the postwar period above all will be the time when good promotional work will be needed.

"It is true of course that there will be a wide open market for all types of refrigeration, both commercial and domestic," Mr. Abbott explained, "but it is a mistake to think that customers will simply rush in and buy everything available. My experience so far has been that the prospect's attitude is somewhat the other way. Many of them feel that the lack of good materials and conversion factor will produce jerry-built coolers and equipment which is more likely to break down under hard usage than the prewar variety. At the same time they are inclined to wait until toplight manufacturers are back to full scale production. Thus as fast as any dealer installs any kind of commercial job which represents the best he can produce, he should take steps to use this as a promotional aid in selling later jobs."

Salesmen to Use Photos

Mr. Abbott's plans for promotion include first of all, a "photo sales kit" on every job, which by visual proof, will back up all sales arguments brought to bear on any prospects. Following the old Chinese adage that a picture is worth a thousand words, he plans to use photography extensively to let a customer-to-be see rather than hear, what his job can be.

"It boils down simply to using good showmanship all the way after the war ends," the Fresno engineer pointed out. "The way to make headway in the postwar market is doing a good job with a good product, allowing plenty of extras and special features in every installation, and photographing all such to be made up into a sales kit for that particular kind of installation. Closeup photographs of good installation ideas and methods, combined with worthwhile engineering to produce them, are an infallible means of offsetting a prospect's timorousness about buying now."

"Showmanship," as Mr. Abbott puts it, includes many extra touches on all types of refrigeration which can be presented later on to other prospects as well as satisfying the customer. "From now on, make every installation look like something to be proud of," he advised. "For example, if hand valves are installed on any system, locate them all on a handsome wall panel, well trimmed and provided with such touches as chromium brackets. Then photograph the panel and use it to sell the prospect whose store or plant shows that he likes neatness and efficiency.

"There are scores of opportunities to use showmanship on every refrigeration installation. When putting up coils, use heat loops in strong brackets, and paint them to match of contrast the surroundings. Use metal supports and brackets everywhere, instead of tape or wire. A perfect example is the installation of a standby half-horsepower unit on a cooler setup. Where the contractor puts one of these in, he will be wise to fence it in against the danger of cats or rats getting into the belts or moving parts and ruining it. We use heavy galvanized screen with a painted wooden frame, and make certain that the compressor unit is perfectly protected. Then we will photograph it, and add to the sales kit on that job to be used in convincing the next prospect that we are thorough from every standpoint on every job.

Sell Customer on Spending

"Naturally every customer will want to save as much money as possible on his installation—but if the dealer is wise he will sell the owner on the wisdom of spending a few extra dollars to make a safe, foolproof system. One thing which we stress is installing small galvanized metal drip cans to catch grease, oil, refrigerant fluid, etc., throughout a system—and thus prevent a dust catching grease spot from appearing anywhere. This only costs a few cents and can go a long way toward selling another job. Likewise, if at all possible, install a sight glass over or under the dryer—put it in the line somewhere and show the owner how to check the liquid for clearness, or the bubbling, cloudy condition which indicates that something is wrong. A safety factor like this counts a lot on the next sale, and costs only $1.15 or so. Put all switches, solenoids, etc., in a neat central box and explain to every customer how to use them, what each part does, etc.

Then take a good clear picture of the switch, valve and solenoid before boxing them in and use these pictures in helping to sell more such installations.

"I've seen photographs sell job after job by simply playing up these extra features. In one case, we installed a large dairy aerator. Normally these are steam cleaned after every milk run, and in many cases, the high

(Continued on page 60)

Air Conditioning Industry Predicts Huge Postwar Expansion

THE nation's air conditioning industry is looking forward to a postwar period of unprecedented expansion and prosperity is shown in a survey made by the New York Journal of Commerce.

Encouraged by the approaching prospect of limited civilian production, industry spokesmen talk of increasing annual prewar volume of approximately $40,000,000 to an over-all peacetime market of more than double that amount within a three-year period. Close outside observers, more optimistic in outlook, discuss air conditioning as "the next billion dollar industry" and place their estimates for the early postwar years as close to $800,000,000.

As in previous years, the air conditioning industry is looking forward to an ever-increasing field for its service. Aside from the many common applications, there seems to be no limit to air conditioning in the industrial field. Before the war many new applications were being found. These have now been augmented by the precision manufacturing industries until few venture to predict the wide scope that is before the field, and none can foresee all the uses which may still be found for this coming "billion dollar industry."

Industrial Uses Increase

Both groups point out that industrial possibilities as already indicated and developed during wartime are "practically limitless" and that the number of industries which have found air conditioning to be an essential part of their work is constantly increasing. While certain processes in the chemical, food and textile industries had long been found to be both improved and made less expensive through the use of air conditioning, war production has broadened the field to take in aircraft in all phases, explosives, electronics, iron, steel and metal working, mining, synthetics, opticals, tobacco, candy, chewing gum, brewing, petroleum, rubber and a host of other products where simultaneous control of temperature and humidity and laboratory precision are a required factor.

Turning to the broadened commercial use of air conditioning when interrupted by the war, a survey has shown that this lucrative market is still in its infancy. Fewer than 10 per cent of all big department stores, less than 25 per cent of railroad passenger cars, barely 15 per cent of all hotels and only 5 per cent of office buildings were estimated to have been air conditioned, while the surface admittedly has not been scratched in the field of smaller shops and establishments. Hospitals and steamships also rank high on the postwar possibility list.

Packaged Units Popular

The third prospect, around which most competitive discussion centers, is the potential residential market in which apartment houses are practically virgin territory while the anticipated postwar building boom carries highly significant implications. In this field, it is admitted, successful exploitation must depend considerably on the industry's ability to reduce selling prices. It is hoped that postwar standardized quantity production will lower costs and consumer prices which in turn will broaden this market and thereby increase volume, a cycle which contributed largely to the success of the parent industry, refrigeration.

Differing from large industrial installations which are "tailored to measure" by engineers and in which no two buildings are alike, requiring much preliminary study, special equipment and assembly, portable or packaged air-condition units are getting an increasing amount of attention from manufacturers in other lines of business, seeking something to do with enlarged war plants. This situation has caused already well established companies in the field some concern.

The two companies, Carrier Corp. and York Corp., which have the largest percentage of their total business in air-conditioning, are also important makers of ice re-

frigeration machines. York operations cover the entire field of commercial and industrial refrigeration and air-conditioning.

Carrier Corp. leads in air-conditioning, contracting and engineering. It specializes in heavy industrial and engineering installations, but is equipped to provide almost any kind of atmospheric conditions in practically all types of buildings. Through arrangement with Safety Car Heating & Lighting Co., the railroad market is served. The company also makes small air-conditioning units for homes and offices in normal times.

Small Reconversion Needed

According to Carrier officials, the company has virtually no reconversion problem but has under contemplation improvements of and additions to its plant which may entail some rearrangements of production equipment.

A major new product developed during the past five years is a commercially practical conduit system for air-conditioning (including heating) multi-room structures, such as hotels, office buildings and apartment houses. Through elimination of the large ducts which are a part of conventional air-conditioning systems, large amounts of space have been conserved.

General Electric Sees Markets

The recent establishment by the General Electric Co. of separate air conditioning department as one of the major divisions of the company's activities is an indication of the importance which the company places in the home heating and air conditioning and the commercial and industrial air conditioning and refrigerating markets in the postwar period. A recent report by George R. Prout, general manager of the air conditioning department, cited one estimate that about 70,000 room units will be installed in the first full year of production after the war.

Westinghouse Expands Plants

"The rate of growth after that is anyone's guess," he added. "There is a tremendous economic demand for air conditioning in the commercial field. Theatres, stores, restaurants, hotels face an ever-growing pressure to install air conditioning in order to meet postwar competition. The market as it is now known is only about 3 per cent saturated. This means that there is somewhere in the neighborhood of 46,000,000 horsepower in air conditioning equipment yet to be installed in the establishments now considered prospects.

Westinghouse Electric Co. air conditioning apparatus is made at two major divisions, the air conditioning division at Jersey City and the East Springfield, Mass., plant. The company looks to several major markets as postwar outlets for air conditioning apparatus in one or more of its aspects, Ross Rathbun, manager of the air conditioning division, pointed out. The largest postwar market, to be developed, from the point of industry volume, is the industrial field, he said.

Westinghouse has definite plans under way to provide precipitron electrostatic air cleaner for home as well as industrial use. About 100 home central units are already installed as pilot models in homes around Pittsburgh. Westinghouse expects to be able to provide complete cabinet units for homes, which can be installed at a cost to the user of about $250, and market research studies indicate that at this price there will be a huge demand.

Chrysler Predicts Gain

Ralph C. Cameron, director of merchandising for the Airtemp Division of Chrysler Corp., points out that in 1941 there were produced or marketed 1,505,000 units in heating and 42,641 units in air conditioning. He believes that at the end of the fifth year of peace these figures will change to 3,615,000 units in heating and 197,840 units in air-conditioning, a combined rise in manufacturers' dollar sales from $122,565,000 in 1940 to an estimated $430,822,000 in V-5 year.

S S S

LOCKERS TO SELL HOME FREEZERS

WITH an eye to wide popular acceptance of home storage units for frozen foods, most of the nation's frozen food locker operators are developing plans to sell and service the home models when production of them is released. In a poll conducted recently by the National Frozen Food Locker Association, more than 80 per cent of the locker operators indicated their interest in acting as distributors for the home units after the war. The model for home use most widely advocated by the operators will be a unit of from five to twelve cubic feet capacity, designed primarily for storage of food already frozen.

Experimental Locker Plant Opened in Ithaca, N.Y.

THE city of Ithaca, New York, population 25,000, is to be a "guinea pig" for the fast developing frozen food industry. The experiment will center around the new "Mother Zero" freezer locker which Governor Thomas E. Dewey dedicated in mid-May as a "symbol of new and better processes in agriculture, in nutrition and in health of the American people."

Built by the Cooperative Grande League Federation, the "Mother Zero" plant is operated as a community service by the Cooperative P&C Family Foods. The Cornell School of Nutrition, in cooperation with the sponsoring organizations and private companies, will utilize the plant for study and research. Governor Dewey characterized the plant as "a central point where many forces for good will merge."

"The whole Ithaca community," the governor said, "city people and farmers alike, will participate in the experimental developments. The various companies which will transform these laboratory miracles for the homes of all our people will be continuously represented in the research and experiments."

Others speaking at the dedicatory exercises included Dr. Edmund Ezra Day, president of Cornell; H. E. Babcock, chairman of the Cornell Board of Trustees, and Dr. L. A. Maynard, director of the Cornell School of Nutrition. Each spoke in support of an optimum human diet.

The "Mother Zero" plant combines the best features, including a number of experimental ones, found in a study of locker plants in 15 states. Its 932 lockers, some

(Continued on page 58)

Views of opening ceremonies at formal opening of Locker Plant at Ithaca, N. Y.

Top: Governor Thomas E. Dewey, in an address, terms the farmer-cooperative-built-and-operated locker plant a model of what can be done by every community for all its citizens through freezing foods.

Center: Governor Dewey, center, gets a few pointers on poultry processing from H. E. Babcock, right, Director of Research for the Cooperative Grange League Federation Exchange. Dr. Edmund Ezra Day, left, President of Cornell University, looks on.

Bottom: Part of the huge crowd which listened attentively as Governor Dewey, in an NBC broadcast address, dedicated the new frozen food locker plant.

Frozen Food Cabinets in Postwar Stores

Here's an idea used by a neighborhood food store; placing a modern frozen food cabinet where it can be seen through a large window — a permanent window display advertising the fact that fresh frozen foods are for sale inside.

THE distribution of frozen foods in coming years will involve the purchase and operation of a great volume of display and dispensing equipment. About a year ago the WPB Task Committee on Commercial Frozen Food Storage of Dispensing Cabinets estimated that 38,000 stores have this equipment in use out of a total of 400,000 food stores in the U. S. A very large market is thus indicated for the coming years. While some of the smaller stores will require a single cabinet others will need extensive and elaborate equipment. All this indicates a considerable field for manufacturers, dealers and refrigeration service men.

Increase in Frozen Foods

Supporting the view of the Task Committee is the large increase in production of frozen foods during the past five years. The volume of frozen vegetables has been multiplied three times and volume of fruits has been more than doubled. A significant portion of both these commodities has been used to supply the armed forces but when these men are back in civilian life there is no reason to believe that their consumption of frozen foods will be any less and probably it will be greater.

Retailers are making preparation to handle frozen foods properly in their stores. Among these are the stores associated in the Independent Grocers Alliance, a large voluntary chain organization.

The Foodliner, the Independent Grocers Alliance's new streamlined frozen food store, will be in nation-wide operation by the end of the year, J. Frank Grimes, head of IGA, stated recently in announcing extensive plans for frozen food distribution.

The Foodliner will be divided into two equal sections, the front room, a streamlined version of the present self-service store, and the second room exclusively for frozen foods. By air-conditioning an 80 degree temperature will be maintained in the front room and a constant 60 degree temperature in the frozen goods department. The sections will be partitioned by a thermo-glasswall, with an open arch in the center.

For the initial installations IGA will distribute 250 cabinets in the Midwest, and on the East and West Coasts.

Grimes said that a year's investigation went into IGA's preparations for invading the frozen food field. Based on data secured then Grimes predicts that 80 per cent of the postwar food store business will come from the sales of frozen merchandise.

The frozen food cabinets will be of the open display variety for self-service. A continuously circulating curtain of cold air will protect the merchandise. IGA plans for the Foodliner, call for separate departments for pre-packed frozen and fresh meats, prepackaged fruits and vegetables, and precooked frozen desserts.

(Continued on page 60)

QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

COMMENT ON QUESTION NO. 659

WE WERE interested in reading the answer to question No. 659 in your April issue. This question deals with the proper location of a thermostatic expansion valve on a frozen food cabinet.

We agree with the answer insofar as it applies to a gas charged valve. However, another type of thermostatic valve is available and has been rather widely used for farm and home freezers. This type valve is charged with liquid so that the valve itself may be located either inside or outside the cabinet in any surrounding temperature. The low temperature thermostatic charge provides a quick pull-down of suction pressure and corresponding protection for the compressor motor during abnormal temperature conditions. It also assures a tight closing valve during the off-cycle even though the bulb temperature increases above the evaporator temperature by a considerable margin. It also produces a very smooth thermostatic action which results in a steady suction pressure and consequent full use of the evaporator. This thermostatic charge is not to be confused with the usual liquid charge. It is known as Type "Z" and is manufactured by this company.—H. T. LANGE, SPORLAN VALVE CO., ST. LOUIS, MO.

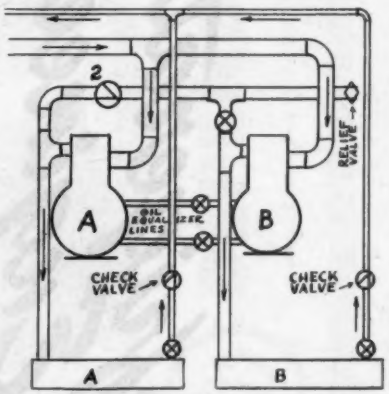
BROKEN COMPRESSOR VALVES

QUESTION 669: I have serviced a Kelvinator twice in six months. The trouble has been broken suction valve both times. The refrigerator worked swell after being repaired both times. There was no oil slugging noticeable at any time. The only thing found wrong both times was a completely dirt filled condenser. I would like to know if it is possible for high head pressure to break this valve? The break downs happened about five months apart. I would appreciate your opinion on the matter. It has A.X.U. set at 8 inches.

ANSWER: The difficulty you have encountered with broken piston valves is generally the result of high head pressure or carbon forming in the head of the compressor. When carbonization becomes very bad, the discharge valve cannot open properly to permit gas passage from the cylinder. The piston valve is then flexed to its maximum on each stroke and finally breaks.

OPERATING ONE CONDENSING UNIT IN A PARALLEL HOOK-UP

QUESTION 670: Please inform me if it is possible to maintain an even liquid level and no bubbles in the liquid indicators of both liquid lines when one machine is run for a week then turned off and the other machine turned on. Referring to the diagram, when compressor A is running and B is idle the liquid surges into receiver on B through the liquid line. Both receiver valves remain open at all times but the water flow is shut off from the condenser that is idle. Is it possible to prevent this transfer of refrigerant by throttling the valve marked one to equalize the condenser pressures? There is no surge between condensers when both machines are running. What is the correct direction of rotation on a 15 horsepower carrier unit?



ANSWER: After studying your diagram, I believe the installation of a check valve in each liquid line between the liquid shutoff valves and the tee in the liquid line will eliminate the trouble. It is only natural that the refrigerant will collect in the idle condenser because the operating pressure is

Refrigeration Service Engineers

PERFORMING OUTSTANDING MAINTENANCE JOB

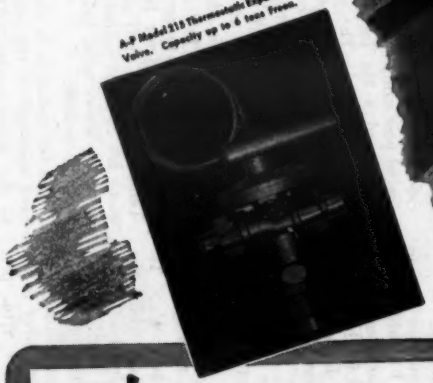
Today, in towns all over America refrigeration service engineers are doing an outstanding maintenance job of keeping refrigerated display cases, ice cream cabinets, food storage lockers and the countless other applications of refrigeration running smoothly and efficiently.

On call the refrigeration service engineer performs his task, oftimes while the city sleeps. Thousands of dollars he has saved retailers, countless thousands of pounds of precious food he has prevented from spoiling.

These men rely upon A-P DEPENDABLE Refrigeration Controls. They use A-P DEPENDABLE Refrigeration Controls to help them perform their important task. As many of them write "I use a lot of A-P Controls and never had one fail me yet."

These men rely upon A-P DEPENDABLE Refrigeration Controls. They use A-P DEPENDABLE Refrigeration Controls [illegible] as many of them write "I use a lot of A-P Controls and never had one fail me yet."

AUTOMATIC PRODUCTS COMPANY
2454 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN
EXPORT DEPT., 13 East 40th St., New York 16, N. Y.



AP DEPENDABLE Refrigerant Valves

Stocked and Sold by Good Refrigeration Jobbers Everywhere • Recommended and Installed by Leading Refrigeration Service Engineers

greater than the static pressure in the idle system. The installation of check valves at these two places will make it possible to operate either machine separately by closing valve 1 shown on the drawing. When both compressors are operated, this valve should be open. If the relief valve is to remain in the circuit of the operating compressor, a check valve must be installed at point 2. Then, when compressor A is in operation, valve 1 is opened and the check valve will prevent condensation in receiver A.

There is no accepted practice among manufacturers as regards the direction of rotation of the compressor. In fact, most of them have compressors that rotate in either direction, depending on the model. The 15 hp. model 7F6 is eccentric driven and will operate in either direction but the 15 hp. model 7H6 is a crankshaft and must pull from the bottom of the flywheel. An arrow is stamped into the crankcase on the flywheel end indicating direction of rotation.

CONVERTING ICE BOX TO MECHANICAL REFRIGERATOR

Question 671: I have been asked to make an estimate on converting a large reach-in ice box to a mechanical refrigerator. I would like to know how to figure the size of the coil and unit. The box will be a two temperature system as I intend using a large finned coil in the ice compartment and an ice maker for 100 to 150 ice cubes in one of the lower storage compartments. The box measures 12 feet 6 inches long, 9 feet 6 inches high and 3 feet 4 inches deep with the ice compartment across the top.

I have on hand a Lipman number 54, one-half horsepower unit which I would like to use but I am doubtful whether it can handle the job. The box is located in the kitchen where the temperature of 100 degrees is quite common. What would be the best type of hook-up for this job?

Answer: In order to arrive at the leakage load for the reach-in box, you first determine the type of insulation used. Then refer to tables of heat leakage for the overall transmission (commonly known as U). The formula to use is Btu/hr. leakage $=$ U $\times$ Td $\times$ Area. To this heat must be added the useful load and the ice freezing load based on quantity to be frozen per hour. Water requires the removal of 144 Btu. per pound to change it to ice. The water will have to be cooled from normal temperatures to 32 degrees which will require one Btu. per pound per degree removal.

Your next step is to determine from the manufacturer the capacity of the condensing unit at the suction temperature you desire to operate the system. The ice maker will have to be maintained at a temperature of 5 to 15 degrees depending on how rapid freezing is required. This will be the temperature on which to base the unit capacity. A two-temperature snap action valve should be installed in the finned coil suction line to maintain a higher pressure in this coil.

The evaporator will have to be adequate to remove the leakage and useful load based on a 14 to 18 hour running time of the machine. Study the article in the March issue of the Refrigeration Service Engineer on Evaporator-Compressor Balance.

PARTS FOR DAYTON

Question 672: Could you advise me who manufactures the Dayton units or where I could get the repair parts on Model M44-71?

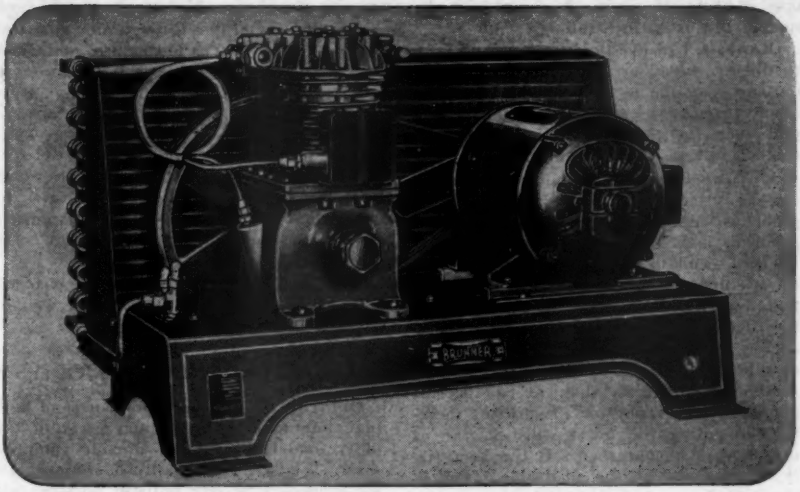
Answer: The Dayton refrigerator was manufactured by Heinz and Munchauer, Buffalo, N. Y. I am not sure the machine is still being made; however, you may be able to obtain parts by writing to the above company. The model number of the compressor is CF-147, a single cylinder belt driven system with a spiral condenser cooled by a fan mounted on the motor pulley.

TROUBLE IN DRAWING BEER

Question 673: I am having trouble with a unit I rebuilt and installed last fall. I used a one-half horsepower Frigidaire water cooled unit using a three-quarter horsepower motor and a 3½ inch motor pulley using methyl chloride. The unit is hooked to a Temprite 25B3W&S beer cooler and a 10 tray ice maker. The control is set to cut in a 23 pounds and cut out at 4 pounds.

The trouble is short cycling and foaming beer. The first two glasses drawn are fine but the third one is almost all foam. In order to get even two glasses without too much foam, I have to carry 45 pounds of air. An 18 inch restrictor line leads from the Temprite to the draft arm. Recommendations are 20 to 25 pounds of air but my experience shows most installations are using 30 to 35 pounds.

The ice maker is in the back bar and the beer kegs are on the same floor in a walk-in that is not cooled. The beer lines from the kegs are lying on a concrete floor and



It is the component of all parts that make the whole BRUNNER Condensing Unit...

Brunner's responsibility does not end with the precision and close tolerance manufacturing of the component parts of Brunner Condensing Units! It is our responsibility, as well as yours, to see that every Brunner Condensing Unit keeps operating for the longest possible span of life!

For that reason one of our basic principles is service! Service by the Brunner organization, Brunner Field Men, and their jobbers and dealers furnishing parts to you so that you, in turn, can render service that will keep Brunner Condensing Units *operating!*

We aim to maintain a stock of parts for every Brunner Condensing Unit now in service. Orders for parts are filled promptly to our jobbers and distributors, or to service men direct, at their request in an emergency. In the majority of cases service men can pick up parts most frequently in demand from the stocks of Brunner jobbers and distributors. Should the jobber or distributor be temporarily out of a desired part, he can procure it promptly from the factory. Should a unit replacement be necessary this can also be arranged by the jobber or distributor. If you have a servicing problem, Brunner factory representatives are available to assist you.

When ordering parts, remember to give the model and serial number of the unit as well as the part number, whether you order from the jobber or distributor or from the factory direct.

Brunner service will help your service keep Brunner Condensing Units serving!

BRUNNER MANUFACTURING CO.
UTICA 1, NEW YORK, U. S. A.

ARMY NAVY
BRUNNER
FOR OVER 37 YEARS
THE SYMBOL OF QUALITY

the lines are 25 feet long. The condensing unit is 61 feet from the Temprite and the suction line is ⅝ inch tubing.

Of course, I realize the beer kegs and lines should be cooled or insulated. Is the unit too small for the long suction line? Would the arrangement be improved by locating the unit where the kegs now are and putting the cooler and kegs farther from the bar?

ANSWER: I believe your major difficulties can be grouped into two general fields; problems with the refrigerating system and problems involving the handling of beer.

There seems to be nothing to substantiate the use of a larger condensing unit. If the unit were too small, it would run about all the time and at longer periods than short-cycle. I am inclined to think that the unit may be too large now. The other possible source of trouble is that oil has become lodged in the evaporator (Temprite) thereby eliminating the lower coils insofar as useful work is concerned. If the Temprite is removed and all the oil drained from it, then an oil trap installed at the compressor, you should have a very efficient system.

Of course, you recognize those parts of the installation that need correction for satisfactory operating. These are: Insulate the line from the keg to the Temprite, reduce pressure to 25 pounds, preferably use CO_2 pressure, precool keg. Draft beer should never be permitted to warm up before using. The beer is not pasturizd; therefore, it spoils rapidly at temperatures above 60° F.

You may find the restrictors from the Temprite to the draft arm are not sized correctly. This will cause agitation and result in foaming (wild beer).

ADJUSTING KELVINATOR BRINE TANK SYSTEM

QUESTION 674: I am having difficulty with a Kelvinator brine tank household refrigerator model No. 10133544 Serial No. 60796. It seems that when I get enough SO_2 in to get the desired temperature in the box that the suction line frosts back.

I have not had a chance to get into the back of the evaporator to see if it has an expansion valve or not but I believe it has. This is the only box of this type I have worked on.

Can you give me any information as to the type of metering device this uses in or on the evaporator and should the brine be changed? If so, how much and what solution should be used?

ANSWER: The operating of the Kelvinator brine tank system is as follows: Refrigerant enters the evaporator through an automatic expansion valve. The machine is controlled by a thermostat. The expansion valve must be adjusted to maintain a low enough temperature of the refrigerant as it enters the coil around the thermostat to open the contacts before the suction line frosts.

There should be a reserve of refrigerant in the system. Set the expansion valve to operate at 4 to 6 inchs vacuum, then adjust the thermostat to cut off when the coil around it begins to frost.

The brine tank was originally charged with calcium chloride. It would be well to check it to see if the tank is full.

ALUMINUM IN OLDER MODELS

QUESTION 675: Is there any danger of finding aluminum or magnesium parts in the older models of sulphur dioxide compressors? We have read the Refrigeration Service Engineers Society bulletin pointing out the possibility of encountering aluminum in systems being changed over from Freon-12 to methyl chloride, so we are interested in knowing whether these metals might be found in some sulphur dioxide compressors.

ANSWER: There is definitely a possibility of finding aluminum in some of the older sulphur dioxide machines. As far back as 1929 some manufacturers used aluminum in the construction of their compressors. The part most likely to be aluminum is the compressor head. Evaporators were also constructed of aluminum tubing in some cases.

CAPILLARY TUBE SIZES

QUESTION 676: Is there any way to calculate the length of the same size capillary tube when used on a different refrigerant? That is, if a certain size and length of tube is used on a F-12 system, how much longer, or shorter would it have to be for methyl or sulphur to maintain correct pressures?

ANSWER: Calculating the length and diameter of a capillary tube for a given household system involves so many variables that it is not practical. Some of these variables are: the coefficient of friction, viscosity of refrigerant, condenser pressure, evaporator temperature desired and compressor capacity. The article appearing in March, 1943, page 16 of THE REFRIGERATION SERVICE ENGINEER covers 26 different makes and 60 models of domestic refrigerators. A short article also appeared in the October, 1943, issue.

JUST OUT! NEW FROM COVER TO COVER!

AUDELS REFRIGERATION and AIR CONDITIONING GUIDE

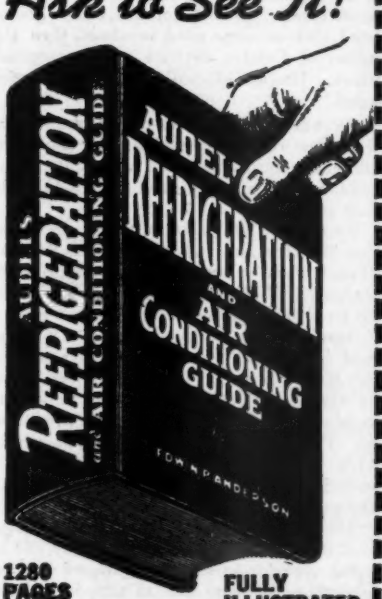
"AUDELS REFRIGERATION & AIR CONDITIONING GUIDE." 4 Books in One: covering the basic principles, servicing, operation and repair.

1. HOUSEHOLD REFRIGERATION
2. SPECIAL REFRIGERATION UNITS
3. COMMERCIAL & INDUSTRIAL REFRIGERATION
4. AIR CONDITIONING SYSTEMS

A gold mine of essential important facts for ENGINEERS, SERVICEMEN, SHOPMEN AND USERS.

A good book is a good friend! Here you will have at your fingers' ends a complete library in ONE VOLUME, the necessary data you have been looking for on: MODERN UNITS, SYSTEMS AND MACHINES, REFRIGERANTS, including Freon, Quick Freezing, Lockers, Water Coolers and Air Conditioning Systems. 1280 pages, 46 chapters all fully illustrated and indexed for ready reference and answers to your questions. Size 4¾ x 6½ x 1⅜. Flexible covers.

Ask to See It!



1280 PAGES

FULLY ILLUSTRATED

TO GET THIS ASSISTANCE FOR YOURSELF MARK FIRST BOOK ☐ ON MAIL ORDER COUPON NOW.

4 COMPLETE VOLS. PAY $1 ONLY $1 A MO.

THEO. AUDEL & CO., 49 W. 23 ST., NEW YORK 18, N.Y.

CUT HERE

MAIL ORDER

THEO. AUDEL & CO., 49 W. 23 St., New York 18, N.Y.

Please mail me for 7 days' free examination the books marked (X) below. I agree to mail $1 in 7 days on each book or set ordered, and to further mail $1 a month on each book or set ordered until I have paid purchase price.

If I am not satisfied with Guides I will return them.

- ☐ Audels REFRIGERATION & Air Conditioning Guide $4.
- ☐ Audels PUMPS, HYDRAULICS & AIR COMPRESSORS 4.
- ☐ Audels WELDERS GUIDE . . . . . 1.
- ☐ Audels BLUE PRINT READING . . . . . 2.
- ☐ Audels SHEET METAL WORKERS Handy Book . 1.
- ☐ Audels SHEET METAL PATTERN LAYOUTS . . 4.
- ☐ Audels AIRCRAFT WORKER . . . . . 1.
- ☐ Audels MATHEMATICS and CALCULATIONS . . 2.
- ☐ Audels MACHINISTS & TOOLMAKERS Handy Book 4.
- ☐ Audels DIESEL ENGINE MANUAL . . . . . 4.
- ☐ Audels MECHANICAL Dictionary . . . . . 4.
- ☐ Audels AUTOMOBILE GUIDE . . . . . 4.
- ☐ Audels MARINE ENGINEERS Handy Book . . . 4.
- ☐ Audels SHIPFITTERS Handy Book . . . . . 1.
- ☐ Guethe MECHANICAL DRAWING COURSE . . . 1.
- ☐ Rogers DRAWING and DESIGN . . . . . 2.
- ☐ Audels MILLWRIGHTS and Mechanics Guide . 4.
- ☐ Audels CARPENTERS and Builders Guides (4 vols.) 6.
- ☐ Audels PLUMBERS and Steamfitters Guides (4 vols.) 6.
- ☐ Audels MASONS and Builders Guides (4 vols.) . 6.
- ☐ Master PAINTER and DECORATOR . . . . . 2.
- ☐ Audels GARDENERS & GROWERS GUIDES (4 vols.) 6.
- ☐ Audels ENGINEERS and Mechanics Guides Nos. 1, 2, 3, 4, 5, 6, 7 and 8 complete . . . 12.
- ☐ Audels Answers on Practical ENGINEERING . . 1.
- ☐ Hawkins Aids to ENGINEERS EXAMINATION . . 2.
- ☐ Audels WIRING DIAGRAMS . . . . . 1.
- ☐ Audels Handy Book of PRACTICAL ELECTRICITY . 4.
- ☐ Audels ELECTRICAL POWER CALCULATIONS . . 2.
- ☐ Hawkins ELECTRICAL Guides at $1. each . . . 10.
- ☐ Audels ELECTRONIC DEVICES . . . . . 2.
- ☐ Audels ELECTRIC Dictionary . . . . . 4.
- ☐ Audels RADIOMANS GUIDE . . . . . 4.
- ☐ Audels NEW ELECTRIC LIBRARY at $4.00 a Volume Vols. I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII.

Name_____

Address_____

Occupation_____

Employed by_____ R-11

MAJESTIC STUCK

Question 677: I have a Majestic unit number 101 rebuilt by a regular rebuilding company. After placing same in the refrigerator, for 24 hours, it ran satisfactorily. Two days later, I tried it again and it refused to start. The fan runs all right. The compressor has a humming sound and wants to start, but seems to be stuck. Is there any way to start the compressor without removing it and returning it to the factory?

Answer: The only suggestion I have on starting the Majestic model 101 unit would be to give it a momentary starting voltage of 220 volts to increase the motor torque. This should be done with care because only a few seconds at the higher voltage will burn out the motor.

Inasmuch as you have only had the unit in operation a short time since being repaired, I would suggest you contact the company explaining the conditions as outlined in your letter to us.

WELSBACH SERVICE

Question 678: I have a problem and would like your advice. We have a Welsbach refrigerator to service. This unit has a dirty system which has to be cleaned out and recharged with ethyl chloride. We have canvassed all the wholesale houses in this vicinity but have not been able to locate one ounce. I wonder if you could advise where some of this refrigerant can be purchased. Would also like to know if any other type refrigerant could be used in this unit with good results.

Answer: I do not know of any jobber who stocks Ethyl chloride these days because there is a very light call for it. However, ethyl chloride is manufactured by R & H Chemicals and perhaps if you would write them they can inform you where you can secure a small amount of this refrigerant.

Ethyl chloride has a boiling temperature of 54°. The nearest refrigerants to this are Freon 21 with a boiling temperature of 48° and F-114 with a boiling temperature of 36°. Both these refrigerants are difficult to get in small quantities but Herveen which is used as a replacement for F-114 in Frigidaire units and having a boiling temperature of 45° might serve as a substitute. Herveen can be secured through some jobbers or you may write the Modern Gas Company, 1084 Bedford Avenue, Brooklyn 5, New York, who manufacture Herveen, for a source of supply.

BRINE FOR COPELAND

Question 679: I have serviced a Copeland brine tank type refrigerator. The brine has leaked out so I am at a loss to know what the brine is or where to obtain it.

Answer: The brine used in all Copeland tanks is made by mixing 40% denatured alcohol with 60% water. If you are unable to obtain the alcohol at the local drug store, you can use any of the radiator anti-freeze mixtures used in automobiles. The solution should be strong enough to withstand 5 below zero temperatures without freezing.

If the brine tank has a leak, it should first be thoroughly washed out with water to remove all traces of alcohol odor before repairing either with a soldering iron or torch. The alcohol fumes are very explosive.

FREEZER PROBLEM

Question 680: Could you please give some information on insulating and figuring the load on a 40 foot locker for farm use? I have a ¾ h.p. methyl chloride water cooled high side that I would like to use if it is large enough. My idea of handling the job is to put sheet metal on the inside and water proof paper ¾ inch Celotex, 4 inches granulated cork or some good insulator, then 1½ inches of Celotex covered with waterproof paper. The outside will be ⅜ inch pressed wood.

Answer: If the water-cooled machine to which you refer is operating at its maximum efficiency, you should have no trouble maintaining a temperature of 0° F. in a 40 cubic foot storage box.

I make this statement with the presumption that the box will be insulated with 5" of cork board in two or more layers properly staggered at the joints and perfectly sealed on the outside against water vapor.

Assuming the box is to be 8' x 4' x 7' the heat leakage with a 90° TD will be about 640 B.t.u. per hour. The freezing load based on freezing 20 lbs. of beef and 10 lbs. of vegetables in 12 hrs. will be about 370 B.t.u. hr. This load can normally be taken care of by a ½ H.P. water cooled or ¾ H.P. air cooled unit with reserve for an increase in the quantity of food frozen per day.

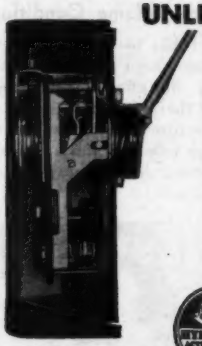
There are so many different insulations that it would be hard to suggest any one as being superior to cork. Corkboard has the advantage of being able to support a load. It is generally estimated that 40 to 50 lbs. per cubic foot can be placed in a storage box; therefore, the load must be considered.

(Continued on page 60)

★ HEAVIER, *LONGER-WEARING* PARTS

possible because of

UNLIMITED POWER OF HYDRAULIC-ACTION



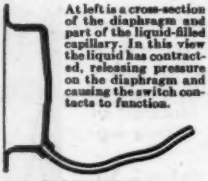
With the terrific power of Hydraulic-Action to actuate the control, tough, strong, hard-driving parts can be built into White-Rodgers temperature controls.

That means a control with long life, free from trouble calls due to breakage or adjustment needs. Under even the hardest, roughest use, White-Rodgers Hydraulic-Action controls can take it and come back for more.

8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

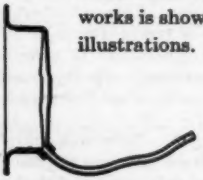
1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
- ★5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

WHY HYDRAULIC-ACTION CONTROLS ARE *LONGER-WEARING* UNDER HARDEST USE



At left is a cross-section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted, releasing pressure on the diaphragm and causing the switch contacts to function.

CONTRACTED



In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

EXPANDED

The amazing expansive and contracting force of the Hydraulic-Action solid-liquid charge is responsible for its long-wearing dependability in service. How this works is shown in these illustrations.

Illustration of the White-Rodgers diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.

WHITE-RODGERS ELECTRIC CO.

1203F CASS AVENUE ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air-Conditioning

Westinghouse Announces New Home Freezers

UPRIGHT home freezers for city and farm use with front-opening doors and sectional inner doors for easy food storage and removal, will be manufactured by the Westinghouse Electric Appliance Division shortly after civilian production of electric appliances is resumed, T. J. Newcomb, sales manager, has announced.

"This upright design, in contrast to the horizontal models now commonly in use in food stores, will make the new home freezer the companion piece to the household electric refrigerator in size and finish and will provide the same reach-in convenience of the refrigerator," said Mr. Newcomb.

"Since the cabinet will occupy no more floor space than a refrigerator of comparable size," he continued, "it can be located in the most convenient place in the home."

Three Models

The Westinghouse home freezer will be produced in three models, starting with a six cubic foot size, to meet both urban and farm requirements. The two functions of freezing and storing foods will be done separately in all models.

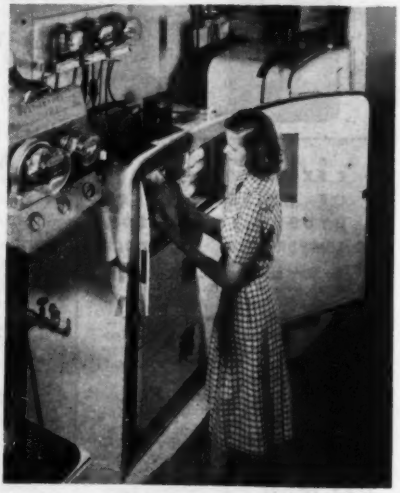
"Sectional inner doors and shelves," Mr. Newcomb pointed out, "make it possible to select specific foods from an individual section of the cabinet without disturbing food arrangements or temperatures in other sections. Zero temperature is maintained in storage compartments. On the freezing surfaces, temperatures range from minus 10° F. to minus 20° F.

"Defrosting," Mr. Newcomb said, "will be as easy, but far less frequent than defrosting an electric refrigerator and it will not be necessary to remove foods from the storage sections. Actual home tests of the new home freezers show that users open their cabinets on an average of only once or twice a day, or less in a month than the average domestic refrigerator is opened every day, and defrosting therefore need be done only once every six to nine months."

The new upright home freezer will, like the domestic electric refrigerator, have a hermetically sealed system. Thus, service will be simplified to a point comparable to household refrigerator servicing.

Tested Under Home Conditions

"Records of foods in 75 locations within each freezer are kept by the Institute. Thermocouples, in effect miniature and highly sensitive thermometers, placed inside the packages before the foods are frozen and read during freezing and storage periods, give a history of temperatures of the foods at all times.



Transferring steak from freezing section to storage compartment of new Westinghouse home freezer

"Every package of food placed in a freezer is weighed when it is put in and when it is taken out to see whether weight losses occur due to improper wrapping. A detailed monthly report by the Institute includes freezing rate curves, processing records on foods frozen, a summary of products frozen and comments on the food removed from a freezer. Comments also cover taste and appearance of foods when thawed and after cooking," the sales manager said.

Tests by the engineering department include a complete survey conducted in sealed, copper-lined humidity rooms to insure the cabinets' performing well and maintaining their appearance in all kinds of climates, according to Mr. Newcomb.

NO

WE do not manufacture complete refrigeration units, such as . . . Frozen Food Cabinets, Farm Freezers, Ice Cream Cabinets, Milk Coolers, Bottle Coolers, Walk-In and Reach-In Refrigerators, etc.

BUT

WE do supply manufacturers of the above complete refrigeration units, and many others with Dole Vacuum Cold Plates.

We do not compete with our customers.

Dole smooth surface plates assure maximum refrigerating efficiency and lasting satisfaction.

Ask us to discuss them with you!

DOLE

Largest Manufacturers of Plate Type Evaporators

REFRIGERATING COMPANY

5910 North Pulaski Road, Chicago 30, Illinois

New York Branch: 103 Park Avenue, New York 17, N. Y.

HOW TO SUBMIT DATA

(Continued from page 32)

Sales Data

With the opportunities for sales of new equipment, service engineers should be preparing themselves to get this business. One of the most prized possessions now is their customer list if it has been methodically kept up to date. Here again, the data appearing in the customer file should be conclusive evidence of the sales to be expected when new equipment is available. When a manufacturer or distributor is approached for a dealer franchise, the data submitted to substantiate claims for sales is one of the many things that will be given consideration.

The service engineer who is capable of estimating a refrigerating job and then going ahead with the installation has a distinct advantage over the man who has made no effort to learn more than just service on the equipment. He not only has the opportunity to get some of the more profitable jobs but he soon becomes recognized as an authority in his community. Manufacturers are reluctant to set a service engineer up to represent them on commercial equipment if his ability to figure the regular and special applications has not been demonstrated.

THE INSTALLATION AND SERVICING OF EQUIPMENT

(Continued from page 30)

Summary

Refrigeration and air conditioning equipment furnishes extremely valuable service to the user. The developments and demand of wartime have made this fact even more apparent to everyone. It is expected that the field of application for such equipment will expand greatly after the war. For at least a few years it will not be necessary to cut corners and trim proposals in order to secure business.

Under these better conditions anticipated for the future, the refrigeration industry should develop the habit of selling users on adequate equipment, well located and installed, and well maintained. Every one of these factors is important in building a firm basis for even greater expansion of refrigeration in the future. If the industry maintains these sound methods in the period ahead, its future will prove even more profitable.

EXPERIMENTAL LOCKER PLANT

(Continued from page 45)

drawer type with 4.6 cubic feet of storage, others door type with 5.4 cubic feet, are all rented.

The plant is managed by H. L. Shurter. It employs a stenographer and general office assistant; three meat cutters; three girls for wrapping food, and a storage man on continuous duty in the locker room. In its busiest day, the plant processed and stored 4,182 pounds of meat.

Service facilities include a fruit vegetable processing kitchen, a new feature; a room for processing hogs and rendering lard; a poultry room where the product is slaughtered, scalded, automatically picked, eviscerated, and wrapped for storage; a meat storage and aging cooler; a pre-chill room used for meat freshly slaughtered; a curing room for hams and bacon; a smoke house; and a cooler for temporary storage of smoked meats.

The project will also have a slaughtering plant, to be located just outside of Ithaca, to do custom work for those desiring animals slaughtered and prepared for storage. The plant will have facilities for handling up to 20 head of cattle daily.

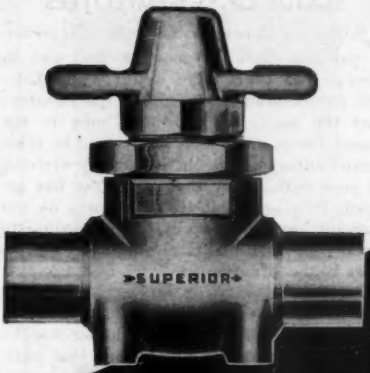
In addition to the cooperatives and state agencies, a number of private companies are sponsoring the nutritional research being conducted by Cornell, including Carrier Corporation, Syracuse, N. Y., and Emil Steinhorst & Sons, Utica, N. Y.

KRUG PREDICTS HUGE DEMAND

(Continued from page 25)

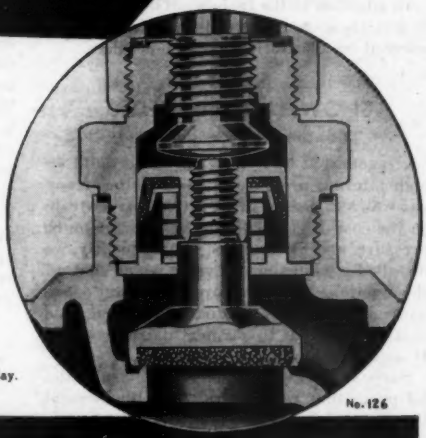
to produce, buy, and sell, after positive assistance to the military and essential war-supplying activities will be left to the decisions of the thousands of manufacturers, wholesalers, retailers, farmers, and ultimate consumers rather than to government agencies and officials.

The demand for mechanical refrigerators is indicated by results of a survey conducted by the Office of Civilian Requirements published on another page of this issue of Refrigeration Service Engineer. The refrigerating industry is being assisted through extension of special priorities to obtain needed machine tools and other equipment to facilitate their return to production as soon as possible.



Superior PRESSURE CUP VALVES
THE *Inside* STORY

The skirt of the pressure responsive cup—acting like the piston in an automobile tire pump—automatically forms a positive pressure seal, with the valve stem in any position. Eliminates packing "drag" and leaks prevalent with conventional packed valves.



. . . and that's not the *only* feature of these SUPERIOR Pressure Cup Valves!

- Seal-cap gasket assures pressure-tight joint.
- Pressure responsive cup forms positive seal.
- Metal-to-metal backseat when valve is fully opened.
- Wrench flats for easy removal of internal assembly.
- Spring assures positive opening under pressure.
- Generous openings assure against pressure drop.
- *Available in sizes through 2½" sweat nd and 2" F.P.T.*

If you haven't a copy of Catalog R2, request one today.

No. 126

SUPERIOR VALVE & FITTINGS COMPANY
PITTSBURGH 26, PENNSYLVANIA

OFFICES IN PRINCIPAL CITIES • STOCKS CHICAGO (6) • LOS ANGELES (15) • JOBBERS EVERYWHERE

FROZEN FOOD CABINETS IN POSTWAR STORES

(Continued from page 46)

IGA plans to pre-package its own meats, the butcher doing this work on Monday and Tuesday of each week with the cuts to be sold through the week-end. He will be seen at work, Grimes said in describing the plan, behind a glass partition with the meat in full view of the shoppers. In the future, Grimes explained, the butcher will have more time to converse with the shoppers in front of the display cabinets.

Because the Foodliner plan will change methods of store management and merchandising, IGA will pioneer manager training classes for men and women interested in the frozen food field. Besides courses designed to develop "know-how" for the frozen field specifically, IGA will present practical courses in retail grocery store operation through tie-ups with Northwestern University in Evanston, Ill., the Harvard School of Business and Washington U., Seattle.

The Chicago session, opening June 18, is limited to 30 students. These will be selected from applicants replying to an advertisement in Chicago papers. They will include ten present store managers, ten servicemen, and ten from the general field.

In addition to the training IGA also offers to put these men into business in localities selected by territorial IGA wholesalers.

S S S

SHOWMANSHIP NEEDED

(Continued from page 42)

heat generated by live steam would build up high internal pressure in the aerator if any gas was left inside. This often puts a strain on the compressor working against too much pressure, and blows fuses. Consequently, we installed a hand shut-off valve which shut off the suction line, and prevented any such damage. This was photographed, and used as a selling point to our next dairy prospect. It sold the job."

Such features combined with good sales kit promotion, will be vital from the moment the war ends on through, Mr. Abbott is convinced. He feels that the contractor who figures jobs carefully, sticks to the estimate, and provides many extras which can help sell other prospects is the man who will maintain a big customer list—while those who forget about promotion because of "an easy market" are likely to find themselves left high and dry.

NO CHANGES IN DEFERMENT STATUS OF KEY EMPLOYEES

FOR some time it has been the general impression that as soon as the war in Europe was over, there would be a wholesale reduction of draft calls in this country; that the need for additional men in the armed forces after V-E Day would be filled almost entirely from the constantly arriving 18 year olds. Now that V-E Day has arrived, it is apparent that the facts do not warrant any such expectation according to recent information received from sources close to the situation.

On the contrary, it appears that there will be little, if any, change in the current rate of induction (about 120,000 per month) through the next two months, and that while the rate will probably drop shortly thereafter to about 90,000 men per month, between 35,000 and 40,000 of these will be men in the 19-33 age bracket now deferred as 2-A or 2-B. About 20,000 of these will probably be men in the 19 through 25 age group; 10,000 to 15,000 per month in the 26 through 29 group, and the balance in the 30 through 33 bracket.

The purpose in reciting these facts is to call attention to the importance of continuing close attention to the draft status of those essential employees now deferred under 2A classification. Such deferments generally run for only a few months and it is not the general practice of local draft boards to give the employer advance notice that the status of any of his deferred men is about to expire or be reconsidered.

As a matter of fact, many employers have lost key men they might otherwise have kept through failure to file renewed claims for deferment until after it was too late. If any men are now classified as 2A, the renewal application should be filed on them at once, regardless of the expiration date of their present 2-A classification.

S S S

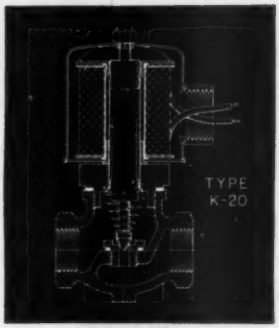
FREEZER PROBLEM

(Continued from page 54)

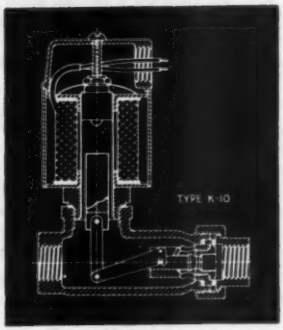
The specifications you have given will make a satisfactory heat barrier provided you use vapor proof paper instead of water proof paper on the outside of the insulation.

It will require about 250′ of $\frac{5}{8}$″ tubing for the evaporator. $\frac{1}{2}$″ tubing is too small because it will take a longer tube and the pressure drop through the evaporator will be too great.

Type V-200



Type K-20



Type K-10

Refrigerant Valves

developed by GENERAL CONTROLS

V-200
THERMAL EXPANSION VALVE

Unsurpassed sensitivity and dependability. Factory set superheat at 10°F. External adjustment. Internal equalizer. External bulb. 5 ft. capillary. Bulb clamp adaptable ⅜" to ¾" O. D. tubing. Integral filter. Wear-resistant valve. Precision ground tight closing ball seat. Interchangeable orifice cartridge insures proper sizing of valve to installation. Valves for Freon, Methyl, Chloride to installation. Valves for Freon, Methyl Chloride and Sulphur Dioxide.

K-15 AND K-20
MAGNETIC STOP VALVES

Magnetic liquid and suction stops for freon, methyl chloride and sulphur dioxide for pipe threads, solder or flare fittings. Maximum fluid operating temperature, 240°F. Two-wire, current failure, high pressure valve handling large capacities with minimum pressure drop.

K-10-7
AMMONIA LIQUID STOP

Magnetic lever action. Highly wear-resistant. Durable needle. Waterproof coils. Any voltage, A. C. or D. C. Current failure valves of packless construction. Lever action develops six times the power of usual type solenoid. High pressures. Tight shutoff. Type K-10-7 and K-10-8 valves especially designed for ammonia.

GENERAL CONTROLS

801 ALLEN AVENUE — GLENDALE 1, CALIF.

FACTORY BRANCHES: Philadelphia, Atlanta, Boston, Chicago, Dallas, Kansas City, New York, Denver, Detroit, Cleveland, Pittsburgh, Houston, Seattle, San Francisco. Distributors in Principal Cities.

NEW AIR CONDITIONED CANDY CABINET

PLANS were announced in a recent news report by John Bess, president of the Refrigeration Corporation of America, for the postwar production of a new air conditioned candy cabinet that prevents deterioration because it combines refrigerator, humidifier and display shelf all in one.

At the request of a candy manufacturer, the cabinet was designed by the company especially for use in drug stores, chain stores and the like that deal only in a limited amount of packaged confections and where, because of a small turnover, losses from spoilage usually run about 10 per cent.

It is a small electrically operated unit, 7 ft. long, and holding from 250 to 300 lbs. of boxed candies. The device features positive moisture control, keeps the contents at a temperature of 65 to 68° F., and insures against checking, cracking or graying of chocolates, no matter what the weather.

The interior of the cabinet is equipped with galvanized, roller bearing, sliding shelves and tracks for the easy removal of the stock. It is illuminated so that the candy stored may be viewed through the transparent doors. The compressor unit is hermetically sealed and, should repairs be necessary, it may be removed from the case in its entirety without disturbing the candy. On top of the cabinet is an illuminated display stand, where the amount of merchandise likely to be sold in a day may be arranged.

The cabinet will go into production, Mr. Bess says, as soon as the necessary materials are made available by the War Production Board.

CONSUMER DEMAND HIGH FOR MECHANICAL REFRIGERATORS

CONSUMER demand for household appliances today is far in excess of peak demand in any year prior to the war, the War Production Board's Office of Civilian Requirements reported May 20 from preliminary tabulations of its fourth nationwide survey of consumer requirements.

The accumulation of demand in the last year is one of the most striking features developed by the survey, OCR said. This cumulative demand for mechanical refrigerators, sewing machines, vacuum cleaners, radios, electric irons and washing machines ranges from 25 to 100 per cent over demand reported in a similar OCR survey a year ago. In units, these percentages represent increases ranging from 1,000,000 to 2,500,000.

Demand shown in the following table, OCR stressed, is current demand, meaning the total of these items that people say they would walk into stores and buy today if supply were ample. These figures do not represent post-war demand, and it must be remembered that the survey was conducted before V-E Day, OCR said. The figures show only demand from households and do not include needs of apartments, new housing, etc.

PURCHASING INTENTIONS IF SUPPLY WERE AMPLE

	April 1944	April 1945
Refrigerators (Mech.)	3,827,000	5,852,000
Sewing Machines	2,823,000	3,451,000
Vacuum Cleaners	2,390,000	4,501,000
Radios	2,682,000	5,085,000
Electric Irons	4,019,000	5,195,000
Washing Machines ...	4,262,000	5,835,000

In addition to the large increase in demand shown by the preliminary tabulations, the survey also revealed a large second-hand market in the appliances. This is shown in the purchasing experience of the respondents showing 1,826,000 sought unsuccessfully to purchase mechanical refrigerators; 411,000 bought, of which 18 per cent were new.

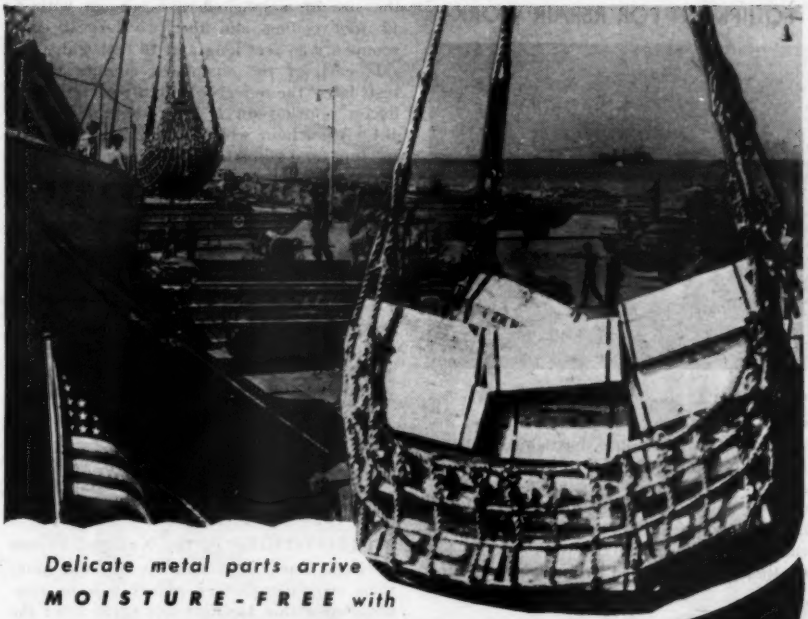
FRANK HANSEN ARRIVES IN U. S.

FRANK HANSEN of F. C. Lovelock, Pty. Ltd., Sydney, Australia, arrived recently in the United States and will spend several months visiting refrigeration equipment and manufacturers. Lovelock represents the largest refrigeration equipment and parts distributor in Australia.

According to this genial personality from the land "down under," refrigeration in Australia is making comparable progress to that in the U. S. Further he says, many members of the armed forces have had an opportunity while stationed in or visiting Australia to see personally the modern applications of refrigerating equipment in the important Australian cities.

In conjunction with a new modern office and factory building to be erected soon, a complete refrigeration library is being established which is expected to be the most complete in Australia.

Frank is no stranger to the refrigeration industry in the U. S., having made numerous visits to this country, the last being in 1939.



Delicate metal parts arrive
***MOISTURE-FREE** with*

Joliet SILICA-GEL

The ideal drying agent....

THOUSANDS OF PACKAGES of delicate, precision metal parts are being delivered to our fighting fronts . . . moisture-free and rust free . . . because of Joliet Silica Gel.

The power of crystalline Joliet Silica Gel to absorb atmospheric moisture within containers is almost phenomenal. Its drying action prevents rust and corrosion. Moreover, it is widely used as a drying agent in cartons and boxes of foods, fabrics, chemicals and other commodities.

Joliet Silica Gel is strictly a quality product. It is clear white; passes a rigid section test; meets exacting government specifications. Write today for full information.

Opportunity for Jobbers

There are excellent opportunities for jobbers to build profitable business on Joliet Silica Gel in a few territories. Write for details.

JOLIET CHEMICALS, LTD.
INDUSTRY AVENUE
JOLIET, ILLINOIS

REFRIGERATION SHOP BUILDS OWN EQUIPMENT FOR REPAIR WORK

NO JOB is too big or too small for the Cebu's Refrigeration men; for they are equipped to handle small scuttlebutt units or large one and one-half ton refrigeration plants. Shown here are from left to right Wayne Weaver, F1c, and Ralph Metcalf, MM1c, working on their different type sea water condenser perfected for exclusive hot weather use and copied by many ships.

WORLD'S COLDEST CLIMATE MADE TO WATERPROOF PLANES

THE world's coldest climate, 110 degrees below zero, will soon be "manufactured" in a new Army test laboratory at Wright Field, Ohio, to weatherproof U. S. fighting planes for action in the bleakest regions on earth.

Behind the steel-clad walls of four massive chambers, Army research men can freeze a drum of ordinary gasoline solid, or test the ability of high powered aircraft engines to start on a sub-arctic morning, according to research engineers of the York Corporation, York, Pa., who designed and built the refrigeration equipment. Each piece of equipment that plays a part in engine starting must now pass this new cold test.

A stream of chilled air pouring off cooling coils at 130 degrees below zero for 16 hours is required to drop the temperature in the chambers low enough for each critical test and engineers working inside must be protected with electrically heated suits. Workers are also protected against frostbitten lungs by a special helmet which allows the sub-zero air to be warmed slightly before it is inhaled.

Two of the smaller chambers are about the size of a spacious living room with a 12 foot ceiling and the two largest cold rooms are 36 feet long and 16 feet wide. Inside each of the chambers, engines under test have the effect of high-powered furnaces, pouring off a heat load of 255,000 B.t.u.'s per hour which must be driven away by fans and absorbed to maintain the low temperatures.

The Army Air Forces' four test chambers make use of all three types of refrigeration compressors. There are three centrifugal units, six reciprocating units and one rotary machine operating on two systems of 70 and 30 tons each. Each aircraft engine under test will consume 400 cubic feet of air a minute at minus 110 degrees for one and one-half minutes and 4,000 cubic feet of air a minute at zero degrees Fahrenheit for four minutes.

5000 NEW PLANTS PREDICTED BY LOCKER ASSOCIATION

PREDICTIONS of the National Frozen Food Locker Association are that more than 5000 new locker plants will be constructed within the next five years after the unconditional surrender of Japan. The Association now represents an industry that operates more than 2,000,000 individual storage units in some 6,000 plants serving about 25 per cent of America's farm families.

Over 80 percent of all plants have been in rural communities. In planning for postwar, the association lists many advantages of the locker plant to the city dwellers. Some of these are buying larger quantities at lower prices for top quality meats and other fresh food products, and supplying such ready prepared foods as baked beans, chop suey, soups, pies, cakes, and many other delicious food items that can be kept stored in the family locker.

Farmers, throughout the meat rationing period have discovered the extremely valuable uses of locker plant facilities to keep them supplied with plenty of fresh meats as well as vegetables.

Locker plants in and near larger cities may be a combination processing and freezing plant, frozen food distributor, and retail store. Several plants have already passed through the experimental stages of operating on this basis and have proven successful.

Portrait of 3 Alco "TK" Valves

Yes, our arithmetic's correct!

One Alco "TK" THERMO Valve — plus these two little discharge outlets — is equal to *three* different sizes of ordinary valves.

By merely screwing a little discharge tube into the outlet—you can change the capacity in 10 seconds ON THE JOB. Only one valve to carry—think of the savings in storage, time, and labor. See your Alco jobber.

VARIATIONS	NOMINAL CAPACITY IN TONS	
	METHYL CHLORIDE	"FREON-12"
1. Without tube	2.30	1.15
2. With "O" tube	1.00	.50
3. With "OO" tube	.52	.25

ALCO

ALCO VALVE CO.

857 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.

LOCKER PLANT BEING BUILT
By R.S.E.S. MEMBER

A COMPLETELY modern locker plant is being constructed at Lexington, Ill., by Eubanks Refrigeration and Engineering Service of Bloomington, Ill. Plant layout includes chill room, ageing room, curing room, locker room, and a bulk storage room, all under refrigeration. The bulk storage room is an added feature not found in most locker plants, says Gordon Eubanks, member of the Corn Belt Chapter Refrigeration Service Engineers Society.

The bulk storage room is to be maintained at locker room temperature and is separated from the locker room with six inches of corkboard insulation. Mr. Eubanks is a strong believer in adequate insulation; the locker room, bulk storage, and freezer are all insulated with eight inches of corkboard and six inches is being used in the chill and ageing room walls, ceiling, and floor. Particular attention is being paid to the vapor seal by first applying Armstrong asphalt paint over which vapor proof paper is placed before installing the corkboard dipped in hot number one Korite. Self supporting walls are all sprayed with hot Korite when completed.

Refrigeration equipment includes separate units on the different temperature rooms to permit efficient and economical operation. Blower type evaporators are being used throughout with automatic defrost on all evaporators operating at sub-zero temperatures.

Mr. Eubanks has some 30 years experience in building ice plants, and commercial storage plants throughout the middle west. Much of his early experience was gained while working with the York Manufacturing Company and the Baker Ice Machine Company. For many years he has been in business for himself doing contracting and refrigeration sales and service.

S S S

Robert E. Sacher
Corpus Christi, Texas

I have one of the Wright calculators and they are certainly a handy tool. I think, too, the monthly magazine put out by you is the handiest magazine on the market today and sure does wonders in helping anyone out. I received a lot of helpful hints myself and other material from this Society and never regretted being a member. Of course, I have much to learn. But I definitely plan to get back into the refrigeration service business for it is a good trade.

SOUTHLAND FIRM REORGANIZES

BOTH to step up present service facilities and in anticipation of a growing need for general maintenance and installation service in the Florida area as soon as new refrigeration and air conditioning equipment becomes available, the Southland Refrigeration & Maintenance Company, Inc., has recently reorganized and expanded. Present offices are at 827 N. E. First Avenue in Miami, Florida, and negotiations have been completed to move into their newly acquired building at 6 N. E. 38th Street. The first floor has been laid out for show rooms and offices, while the second and third floors are to be used for modern shops equipped to handle service.

Future plans of the firm include expansion in the industrial, commercial, and domestic fields. For each, unique plans of service are being worked out, offering purchasers of service and equipment unusual advantages. Marine refrigeration, according to Mr. Joseph E. Griffin, president, is another of the concern's proposed activities.

At present, the concern is negotiating with numerous manufacturers with regard to distributing franchises, and its plans call for vigorous promotion, as soon as production requirements are eased up and sales activity can be resumed.

S S S

JOHN BUSH OPENS OWN SERVICE BUSINESS

FOR several months, John Bush, regional R.S.E.S. director, has been operating an independent refrigeration service business in Lockport, N. Y. When he decided to go into business for himself, the logical move was to make his wife, Helen, a full partner. Mr. Bush says, "I had an ad in the paper two days the first week and one day the second week. The calls came in so fast, I had to discontinue advertising because I had more business than I could handle." He had a three-car garage that he has converted into a shop where repairs are completed on refrigerating equipment brought in for overhauling.

S S S

Joseph Ulman has published a certificate that he is conducting business under the firm name of Federal Refrigeration Service at 2626 West Slauson Avenue, Los Angeles, Calif.

Service Ribbons

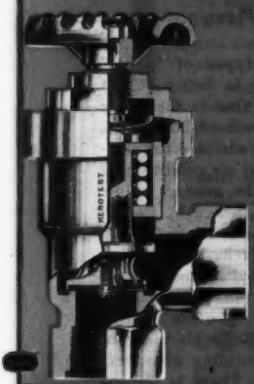
to the JOBBER

For his untiring efforts in supplying Vital parts and equipment during this Wartime Emergency

Heaps of glory to him! His job has been a tough one, too—priorities and restrictions too long to list; long forms in triplicate copies (and often more); sons and daughters in the service; can't get good help—up before dawn and burning plenty of midnite oil. He's begged, pleaded and borrowed (from fellow jobbers) to get the parts and equipment you needed so badly . . . and he'll keep right on battling 'till Victory Day—even though these needed parts should become even more difficult to find.

So for all your requirements, always contact your Kerotest *jobber* FIRST for dependable Brass Valves, Fittings and Accessories for Refrigeration and Air Conditioning use.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.



TYPE 522 VALVE

KEROTEST

Valves, Accessories, Fittings for Refrigeration, Air Conditioning

ORIGINATORS OF THE PATENTED PACKLESS DIAPHRAGM VALVES . . .

KEROTEST

Refrigeration Equipment Manufacturers Association Starts Public Relations Program

WITH the aim of promoting the interests of the entire refrigeration and air conditioning industry, an extensive public relations program was launched on May 1 by the Refrigeration Equipment Manufacturers Association. In announcing the program, Arthur Schellenberg of St. Louis, REMA past president, said:

"We are making this beginning of a much-needed program in the belief that the industry is so closely integrated that the good of any segment depends upon the welfare of the whole. Accordingly, we will seek to foster the interests of everyone in it; manufacturers, suppliers, jobbers, dealers and service engineers, rather than any one group. We feel that the success of this first year's program will show the potential advantages to all branches of the industry and lead to a unified and expanded program for the future years. A concerted effort on behalf of all can bring to realization the tremendous potentialities of this industry."

Objectives of Program

The program, according to R. Kennedy Hanson of Pittsburgh, REMA's executive secretary, will have two basic objectives at the outset:

1. Increasing the public's knowledge of the advantages of refrigeration and air conditioning and the function of the equipment involved.

2. Assisting everyone in the industry; manufacturers, jobbers, dealers and service engineers, in their selling efforts and assuring the industry the largest possible market in the postwar period.

The program will be conducted by Theodore R. Sills & Co., public relations firm, under the guidance of the REMA public relations committee, headed by George Allen of Pittsburgh.

Plans for the program, as outlined establish five points to be followed:

1. Gradually to increase the market for refrigeration and air conditioning equipment in all present fields and in any new fields that may present themselves. It is expected that by the time the industry will be seeking outlets for its production, these expanded markets will be available.

2. To increase the market for replacement parts in existing refrigeration and air conditioning installations by educating users to the importance of maintaining their equipment in prime condition. Here, too, the market is expected to be enhanced by the time the members of the industry can meet it.

3. To create prestige for the industry so that the public will have a high degree of respect for its service.

4. To afford a public relations service along similar lines to related groups in the industry in order to provide greater accumulative effect, greater emphasis on each phase of the program and an enhanced unity within the industry.

5. To spread the story of refrigeration's part in the war, not only to show how important it can be for peacetime uses but to assist in educating all phases of the public to the importance and potential universality of temperature controls.

The purpose behind this planning is explained as follows:

Purpose Behind Planning

"There are two basic types of 'public' which must be influenced to bring fullest benefits to the industry. One is the trade public, those men in hundreds of businesses, professions and industries who are the purchasers of refrigeration and air conditioning equipment. The other is the general public —which includes everyone, which by its desires and interests leads the commercial men to determine their own purchases.

"The housewife who is sold on the benefits of frozen foods will soon make her grocer, butcher and fish dealer provide frozen foods; the executive who demands air conditioned offices will lead building managers to install this equipment. There is no one whose influence on behalf of this industry's products will not be directly valuable to the industry. The scope of the public relations program, therefore, backed by all those favorable factors, is virtually unlimited."

Logan A NAME TO REMEMBER WHEN YOU THINK OF **BETTER** LATHES

BUILT BY MEN WHO VALUE PRECISION

The men who build Logan Lathes place a premium on precision. From their own daily experience in building precision machines they know how vital accuracy is. Not only Logan executives and engineers, but also the men in the shops, share in an all out determination to keep the Logan Lathe the most accurate in its field. This unflagging accent on accuracy from the first assembly to the final testing has done more than anything else to make the Logan Lathe outstanding in precision as well as in rugged strength. It explains, too, why so many industrial executives are depending on Logan Lathes both in tool rooms and on production lines. Ask your Logan Lathe dealer, or write for full information on all models of Logan Lathes.

No. 840 Quick Change Gear Turret Lathe

No. 200 Back Geared Screw Cutting Lathe

BRIEF SPECIFICATIONS common to all Logan Lathes: Swing over bed, 10½"; Bed width across ways, 6-15/16"; Bed length, 43⅛"; Size of hole through spindle, 25/32"; Spindle nose diameter and threads per inch, 1½"—8; 12 Spindle speeds . . 30 to 1450 r.p.m.; Size of motor . . ½ or ½ h.p., 1750 r.p.m.; Preloaded precision ball bearing spindle mounting; Drum type reversing motor switch and cord; Precision ground ways, 2 prismatic "V" ways, and 2 flat ways.

LOGAN ENGINEERING CO.

CHICAGO 30, ILLINOIS C-2

Refrigeration Service Engineers Society

Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.

THE OBJECTS OF THE SOCIETY

To further the education and elevation of its members in the art and science of refrigeration engineering; for the reading and discussion of appropriate papers and lectures; the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery.

INTERNATIONAL HEADQUARTERS: 433-435 North Waller Ave., CHICAGO 44, ILL.

BIRMINGHAM CHAPTER RECEIVES CHARTER

THE Birmingham Chapter of the Refrigeration Service Engineers Society received its charter at a recent dinner at the Molton Hotel with presentation by E. A. Summer, Baton Rouge, an international director.

The committee in charge of the dinner was composed of Floyd Corbin, E. D. Gothberg, George D. Maske and W. C. Kent. C. S. Tucker is acting Secretary.

Temporary officers of the Chapter are Floyd Corbin, president; W. C. Kent, vice president; C. S. Tucker, secretary; and W. E. Hereford, treasurer.

The Chapter has 22 charter members. A dozen or more members of the Montgomery Chapter attended the organization meeting.

HOUSTON CHAPTER RECEIVES CHARTER

NEWEST among the chapters of the R.S.E.S. is Houston Chapter with a membership of 93 members. On May 10, International Secretary, H. T. McDermott, presented the charter to the chapter at a well attended banquet. President, W. C. Timmerman, accepted the charter on behalf of the chapter. Other officers are: Oran C. James, *1st Vice-President;* P. R. Lane, *2nd Vice-President;* E. E. Smith, *Secretary;* J. M. Kellett, Jr., *Treasurer;* and A. J. Luedecke, *Sergeant-at-Arms.*

Previous meetings had been held at which regular educational programs were given that proved of interest to all. These programs and the enthusiasm had contributed to the large membership.

R.S.E.S. Chapter Notes

ST. LOUIS CHAPTER

St. Louis, Mo., May 9—The meeting was called to order by President Ed. Weber for the purpose of electing officers. Movies were shown for the first 45 minutes on the several subjects of newsreel, sports, cartoons, and education. The nominating committee then presented the slate of officers which were unanimously elected. Officers for the year are: Adolph Braun, *President;* Joe Pedrotti, *Vice President;* Sam Wolff, *Secretary-Treasurer;* R. S. Delweiller, *Sergeant-at-Arms.* The following board of directors were also elected: George Becker, Walter Kaerber, and Roland Vizgard.

Retiring President Weber then discussed the new St. Louis building code recently passed by the council. Mr. Weber pointed out that the refrigeration section is of great importance to the service engineers. When copies of this section are available, plans are to supply each member with a copy.

Ten members paid their dues. After the meeting, all enjoyed refreshments.

NIAGARA FRONTIER CHAPTER

Buffalo, N. Y., May 11—An invitation to all servicemen was extended for this meeting held at the Lafayette Hotel. A full evening included subjects on "The Part the Service Engineer Will Play in Postwar" by William Keefe, "Low Temperature Low-side Equipment" by Walter Raskin, Chief Engineer, Stangard-Dickerson Co., "Low-side Equipment" by Hector Thibault, American Coil Co. The door pirze was donated by Beals, McCarthy & Rogers, Inc., who also arranged for the speakers. This was the last regular meeting of the Chapter until September when activities will be resumed by the Annual Corn Roast.

5 GOOD REASONS WHY

You Should Always Specify

SPORLAN VALVES

With Selective Charges "C" and "Z" on All Small Commercial Refrigeration Applications!

CZ

SPORLAN

Peak Performance

VALVES

and Remember...

only **SPORLAN** can give you this **PEAK PERFORMANCE**

because

1 Sporlan selective charges C and Z prevent flooding the evaporator at the start of the cycle.

2 Sporlan selective charges C and Z prevent overloading the motor at the start of the cycle.

3 Sporlan selective charges C and Z minimize hunting during the running cycle.

4 Sporlan selective charges C and Z close the valve quickly and positively when the compressor stops.

5 With Sporlan selective charges C and Z the control is always in the bulb, no matter how cold the valve diaphragm becomes.

How to Determine Which of the Two Charges to Use is Simplicity Itself

Just remember that the Sporlan C charge is always used on all jobs with suction temperatures ABOVE ZERO. *The Sporlan Z charge is always used on all jobs with suction temperatures* BELOW ZERO.

SPORLAN C CHARGE

For All Small Commercial Refrigeration Applications With Suction Temperatures

ABOVE ZERO

DISPLAY CASES — WALK-IN COOLERS
REACH-IN BOXES — WATER COOLERS
BEVERAGE COOLERS — FLORIST BOXES

SPORLAN Z CHARGE

For All Small Commerical Refrigeration Applications With Suction Temperatures

BELOW ZERO

ICE CREAM CABINETS
FARM FREEZERS — HOME FREEZERS
LOCKER PLANTS

Other Sporlan Selective Charges are the Type G for all Comfort Cooling Installations and the Type X for all applications below-30° F.

Sporlan Manufactures Solenoid Valves • Solenoid Pilot Controls • Modulating Pilot Controls • Refrigerant Distributors and the only Thermostatic Expansion Valves with Selective Charges

SPORLAN VALVE COMPANY

3723 COMMONWEALTH AVENUE, ST. LOUIS 17, MISSOURI

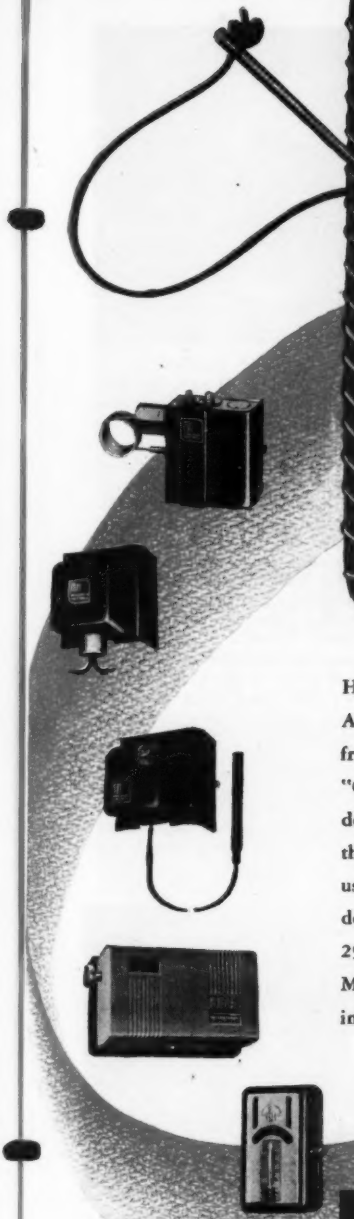
MISSISSIPPI VALLEY CHAPTER

Davenport, Iowa, May 8—The regular meeting of the Mississippi Valley Chapter was opened by President E. J. Ford. All regular business was laid aside so that the entire evening might be devoted to a discussion on forming an Iowa State R.S.E.S. Association.

Secretary J. Lonnie Fish introduced Herman Goldberg who acted as chairman for the evening. Mr. Goldberg gave a short talk on the advantages of R.S.E.S. membership and then introduced Clarence Buschkopf, Acting International President; Archie Fait, President, and James Kline, Past President of the Illinois State Association, and A. L. Robertson, Secretary of the Wisconsin State Association, all of whom spoke briefly on R.S.E.S. activities and the advantages of a State organization.

An open discussion was then held and all those present agreed to form an Iowa State Association. Temporary officers unanimously elected were: President, Ted Glass, Dubuque, Iowa, and Secretary, J. Lonnie Fish, Davenport, Iowa. William Hogan of Burlington, Iowa, was appointed to act with the officers to form a constitutional committee.

Views of the Iowa State Association Formation Meeting. 1. Herman Goldberg presiding as chairman. 2. Clarence Buschkopf, Acting International President. 3. E. J. Ford, President, Mississippi Valley Chapter, Left—Lonnie Fish, Secretary Mississippi Valley Chapter, Right—Archie Fait, President, Illinois State Association. 4. A. L. Robertson, Secretary, Wisconsin State Association. 5. Ted Glass, President, Key City Chapter. 6. Lonnie Fish and Ernie Ford. 7. Constitution Committee, Lonnie Fish, Ted Glass, and William Hogan, Burlington, Iowa. 8. Society Members and others present at the meeting.



What is Frost Free Refrigeration Control?

Honeywell provides the answer with the Polartron *System* of Automatic Defrosting Control. — Applicable to all "above freezing" fixtures the Polartron System provides for temperature "Cut-out" and Pressure "Cut-in" operation thus assuring positive defrosting at the end of each "on" cycle. Take advantage of the full capacity built into your refrigeration equipment — use the Polartron System. See your jobber for further details. Minneapolis-Honeywell Regulator Company, 2934 Fourth Avenue South, Minneapolis 8, Minnesota. Branches and distributing offices in all principal cities.

MINNEAPOLIS Honeywell

CONTROL SYSTEMS

Among those present were refrigeration service men from Burlington, Muscatine, Davenport, Clinton, Dubuque, and other points in Iowa. In spite of it being "V-E" day a total of fifty-six attended the meeting. Eight applications for membership in the Mississippi Valley Chapter were received.

CORN BELT CHAPTER

Bloomington, Ill., May 10—The meeting was held at the Rogers Hotel with President Woodward presiding. George Moore was accepted as a member. A special meeting was arranged to discuss the Illinois State Association convention planned to be held in Bloomington this fall.

The speaker of the meeting was Albert Sawyer of Dole Refrigerating Co. who gave a very enlightening talk on "Plate Refrigerating Coil Application and Performance." Lee V. Whitaker from Olney, Ill., attended the meeting and enjoyed visiting with those present.

CHICAGO CHAPTER

Chicago, Ill., May 8—Over 120 members and guests assembled at the offices of the Liquid Carbonic Corporation, 3100 S. Kedzie Ave., to get first-hand information on the products of interest made by this company. The meeting opened with a regular business session which included the reading of six new applications for membership.

At the close of the business meeting, D. D. Orr introduced John G. Praetz, national service manager for Liquid Carbonic who first outlined the program, stating it would be divided into three parts, namely: The soda fountains and ice cream cabinets, the Copelametic unit, and questions on the equipment. After these subjects, additional questions on the glass-tube working models were to be answered. Mr. Praetz then proceeded to do a very thorough job of familiarizing those present with the various models of soda fountains made by the company.

Left to right: R. L. (Dick) Hendrickson, Director; Lewis Norris, Director; Dwight Orr, Educational Chairman; Art Blanton, and John Praetz, Liquid Carbonic Corp.

At the conclusion of his talk he introduced Art Blanton who discussed the Copelametic unit used on Liquid Carbonic equipment. An actual working unit with glass window was on display for pointing out the various parts. The pictures were taken by Neal Taylor Hall, Director of Publicity, Utilities Engineering Institute.

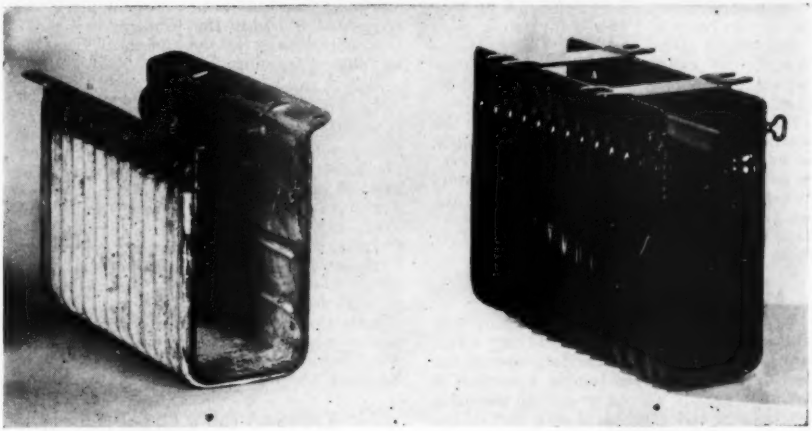
DAYTON CHAPTER

Dayton, Ohio, April 12—The meeting was held at the home of George Click, Springfield, Ohio. Motion pictures and still pictures of the Pacific Campaign of interest to all present were also shown. The business meeting included acceptance to membership Messrs. Paul J. Fox, Herbert McNabb, and Robert E. Peacock.

Part of the group listening attentively to John Praetz as he discussed the soda fountains and their hook-ups. Mr. Praetz expressed his pleasure in having over 120 present for this meeting on V-E day.

Front row: Alex Gordon, Secy.; Floyd Lilly, President; John Habich, Treasurer. Standing: Fred Stevens and Edward Riccio, First and Second Vice Presidents.

Used Evaporators—REPORCELAINED



BEFORE *AFTER*

PORCELAIN EVAPORATORS REFINISHED LIKE NEW

Kelvinator, Gibson and All Others; Leaks Welded, Reporcelained in Blue. We have on hand certain models of evaporators to exchange—no waiting. Send in your old evaporator.

NOTICE—Remove all fittings and no evaporator will be accepted with any welds. Add one dollar for cleaning and flushing out old oil.

EXCHANGE PRICE **$12.50**

USED DRY EXPANSION ALUMINUM EVAPORATORS

6½" wide, 9" high, 12" deep. Bolt hole centers: 4" across front and 7½" front to back. Capacity: 4½ to 5 cubic feet.

$11.75

9¾" wide, 9" high, 12" deep. Bolt hole centers: 4" across front and 7½" front to back. Capacity: 5½ to 6 cubic feet.

$14.00

15" wide, 9" high, 12" deep. Bolt hole centers: 4" across front and 7½" front to back. Capacity: 6½ to 7 cubic feet.

$16.00

All prices F.O.B. Chicago, Ill.

ACME REFRIGERATION PARTS CO.

5217 W. Madison St. Telephone Columbus 4141 Chicago 44, Ill.

April 19—This meeting was held in the Dayton Power and Light service building at which time a representative of the Westinghouse Electric Corp. showed films on its special service course. The information presented was of real value to the members present. All expressed the belief that they had learned points that could be used in their daily work.

May 10—A very fine attendance for the meeting held at W. H. Kiefaber Co. made the evening well spent. Discussion on service policies by manufacturers of sealed units brought out several good suggestions for the members to follow. Arrangements were made to again hold a picnic on Sunday, July 29, at Recreation Park.

MAGNOLIA STATE CHAPTER

Jackson, Miss., May 9—The meeting was held at the offices of Better Living Company. A. E. Shafer, President, opened the meeting and after entertaining a motion, it was unanimously agreed to abolish the office of treasurer and combine it with that of the secretary. W. B. Nelson was then nominated and elected to the new office of secretary-treasurer. The application of C. H. Little was read and referred to the membership committee for action.

Through the courtesy of Mr. Lloyd, two interesting films entitled "Women of America" and "How to Hold a Sales Meeting" were shown. Mr. Shafer then showed a film on the attack on Iwo Jima; also very enlightening.

CENTRAL NEW YORK CHAPTER

Syracuse, N. Y., April 29—Clarence Buschkopf, Acting International President, visited the members of this Chapter in an unofficial meeting held at the home of R. D. Mursh, Secretary.

May 8—A business meeting was held at United Refrigeration Co. Plans were discussed on having a party scheduled for May 27 and Nolan Swift was appointed to make the arrangements. Several new applications were received and a committee was appointed to act on the new applications. Charles Barrett was appointed business secretary. The membership decided to give a war bond to Arthur Snyder, who recently resigned as president to take over managing Gould Farmer's Rochester branch.

TOLEDO CHAPTER

Toledo, Ohio, May 9—The meeting was called to order at Redmans Hall with 22 members attending. Two films were shown entitled "Ramparts We Build" and "One Day of War in Russia." The speaker of the evening was Mr. Seabert of the Veterans Administration who explained Public Law 16 passed by Congress to provide for rehabilitation of men of the armed forces who have a service connected disability. He explained the training plan as directed by the Veterans Administration. A committee was appointed to study the problem and make recommendations to the Chapter regarding apprentice training.

WORCESTER CHAPTER

Worcester, Mass., May 15—This meeting was devoted to the business of electing officers for the year starting July 1st. The new officers are: William E. Tierney, *President;* Arthur J. Osper, *First Vice President;* Harry E. Manchester, *Second Vice President;* John B. Brosnan, *Secretary;* Francis E. Foley, *Sergeant-at-Arms;* Robert E. Davis, Albert Moors, and Albert E. Rivard, *Directors.*

Induction of the new officers will be at the annual dinner meeting to be held in June. The Chapter voted to join the proposed New England Chapter.

KANSAS CITY CHAPTER

Kansas City, Mo., May 2—The regular meeting was held at the Hotel Bellerive at which time the three applicants for membership, Virgil C. Smith, Ohmer W. Barnard, and Frank J. Chop were accepted. Discussion centered around a recent article that appeared in the Kansas City Star under the heading, "The Repair Racket." The Secretary was instructed to write the Better Business Bureau advising them of the standards of the R.S.E.S. and to extend an invitation to attend one of the Chapter meetings.

Bill Schreiber concluded the meeting by giving an interesting lecture on the "Hook-up of Low-sides" and "Design Temperatures of Lockers and Food Storage Cabinets."

COW TOWN CHAPTER

Fort Worth, Texas, May 3—The reorganized Chapter, formerly known as the Lone Star Chapter, held its meeting at McKinley Refrigeration Supply. After a fine fish dinner, election of officers took place. Ed Ketchum, *President;* Howard Lee, *Secretary-Treasurer;* Jack Waldon, *Educational Chairman* were the successful candidates.

Among those present were Chief Warrant Officer, Paul Cato, owner of McKinley Refrigeration Supply and H. T. McDermott, International Secretary R.S.E.S. Mr. McDermott talked on the aims of the R.S.E.S. and the fine feeling that is being shown by manufacturers and the industry as a whole toward the independent serviceman.

At the conclusion of Mr. McDermott's talk, C. J. Gilbert was introduced and proceeded to show a sound picture on War Production.

REFRIGERATION PARTS
Rebuilding and Exchange

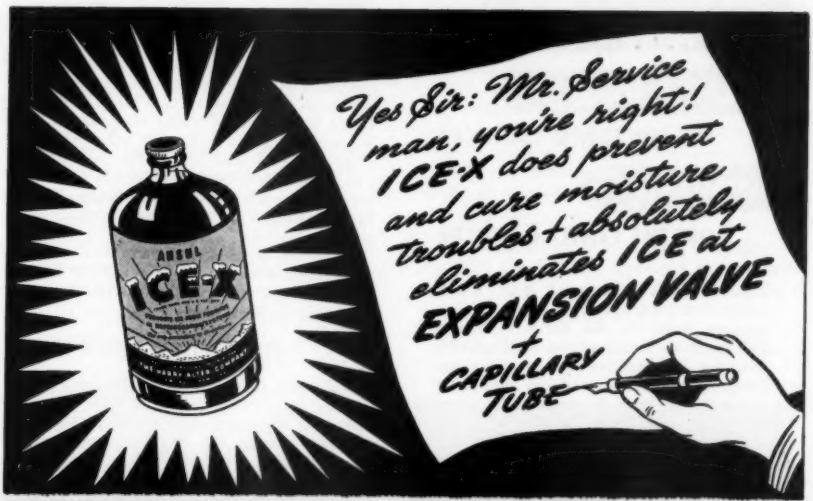
- COMPRESSORS
- CONDENSERS
- WATER VALVES
- CONTROLS
- EVAPORATORS
- FLOAT VALVES

Send Today for This Useful Catalog

UNCONDITIONALLY GUARANTEED

Fully illustrated catalog packed full with valuable information and prices sent upon request on your company letterhead.

REFRIGERATION MAINTENANCE CORPORATION
321 EAST GRAND AVENUE • CHICAGO II, ILLINOIS


ANSUL
ICE-X
Yes Sir: Mr. Service man, you're right! ICE-X does prevent and cure moisture troubles + absolutely eliminates ICE at EXPANSION VALVE + CAPILLARY TUBE

EXCLUSIVE NATIONAL DISTRIBUTOR
THE HARRY ALTER CO. 1728 S. MICHIGAN AVE. CHICAGO 16, ILLINOIS
JOBBERS: WRITE FOR SPECIAL PROPOSITION!

INDUSTRIAL
GAS MASK
FOR

METHYL CHLORIDE
USE THE GMA CANISTER

SULPHUR DIOXIDE
USE THE GMB CANISTER

AMMONIA
USE THE GMD CANISTER

The M. S. A. Industrial Gas Mask offers complete respiratory protection against each of the three common refrigerants when the correct specific canister is employed. Canisters are interchangeable and afford maximum protection. Easy to wear, safe, comfortable! Write for Bulletin ED-7.

MINE SAFETY APPLIANCES CO.
BRADDOCK, THOMAS AND MEADE STREETS
PITTSBURGH 8, PA.
District Representatives in Principal Cities

MONUMENTAL CHAPTER

Baltimore, Md., May 5—After the regular business, George J. Roche, Educational Chairman, introduced Wally Fullerton of York Corp. who talked on his experiences in Australia. He explained the types of refrigerating equipment used there and briefly outlined the customs, living conditions, and habits of the Australians. The entire talk proved to be very interesting.

Election of officers was held with the following results: Walter E. Patten, *President;* J. P. Frazier, *First Vice President;* A. M. Aaron, *Second Vice President;* A. C. Huber, *Secretary;* H. W. Goodhart, *Treasurer;* W. F. Houpt, *Sergeant-at-arms;* George J. Roche, *Educational Chairman.*

READING CHAPTER

Reading, Pa., April 17—After disposing of the regular business, President Mathias called on Joe Heltzinger, publicity committee, who advised the members that local newspapers are now carrying notices of meetings and activities of the Chapter.

Two new members, Herbert Diebert and Samuel Snyder were accepted as members.

May 1—23 members attended the meeting in which officers for the year were nominated. Election of officers will be held June 5th. Charles Gehringer who talked on "Dryers and Drying Agents."

SAN DIEGO CHAPTER

San Diego, Calif., May 10—The meeting was held in the Anderson Building with an excellent attendance including 12 guests. Educational Chairman O. G. Phillips introduced H. G. Kirkwood of Peter H. Askew Co., Los Angeles, who gave a very interesting talk, supplemented with diagrams on "Evaporative Condensers and Forced Air Coils." Following Mr. Kirkwood's discussion, Merle G. Haynes talked on "Some Special Uses of Expansion Valves."

After the meeting, the members and guests were treated to real Mexican style chili and beans prepared by the Chapter's official chef, Merle Wampler.

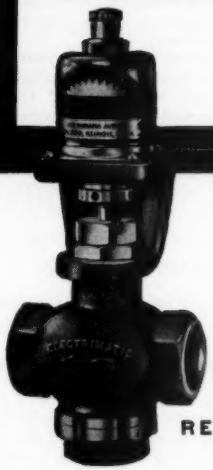
KEY CITY CHAPTER

Dubuque, Iowa, April 3—The meeting was opened by President Glass who after handling the regular business entertained a motion to change the regular meeting night from the first Tuesday to the first Wednesday of the month. The membership approved the change. The question of advertising arose and was discussed by several members. C. J. Brashon was appointed to prepare an advertising plan for the membership to acquaint the public with the Chapter members activities.

• That's the idea behind these Aerovox motor-starting capacitor replacements — to keep those refrigerators running for the duration at least. And also to net you a nice profit for servicing. 28 universal numbers take care of practically all standard capacitor-type motors. Refer to the handy conversion chart at your jobber's. Ask him for latest catalog. Or write us direct.

AEROVOX Capacitors
INDIVIDUALLY TESTED
AEROVOX CORP. NEW BEDFORD, MASS., U.S.A.
In Canada: AEROVOX CANADA LTD. HAMILTON, ONT.
Export: 13 E. 40 St. New York 16, N.Y. Cable: ARLAB

EFFICIENT... ECONOMICAL



TYPE
WP
PRESSURE ACTUATED REGULATING VALVES

Individually tested for efficient, economical operation. WP regulating valves may be mounted in any position and will give lasting, trouble-free performance. Brass body, two ply power bellows and corrosion resistant materials for all internal parts. They are designed not only to start and stop the flow of water but also to feed the economic amount of cooling water to secure the proper condensing pressure without waste. The water flow increases and decreases with the rise and fall of actuating pressure.

WP regulating valves are available in ⅜", ½" and ¾" FPT sizes and other valves of other types are available in sizes ranging from ⅜" to 2" FPT.

Write for a copy of our latest catalog.

Electrimatic
2100 INDIANA AVENUE
CHICAGO 16, ILL.

CENTRAL CONNECTICUT CHAPTER

Hartford, Conn., April 30—With an attendance of 22 members, the first order of business was the reading of a recent letter from charter member, Pvt. Leo Helinsky now stationed in Iran where he is doing refrigeration work. He reports average temperatures of 180 degrees and a high of 170 degrees for last summer.

A report was given on the formation of the proposed New England Association held at Sturbridge, Mass., on April 20th. Discussion centered around several suggestions worthy of consideration. The Chapter contributed to a fund being raised to build a swimming pool for blind soldiers. The meeting closed after hearing a report on the training school by James Felix and Stanley Baldwin.

CLEVELAND CHAPTER

Cleveland, Ohio, May 8.—The meeting was devoted to a talk given by Frank Walbridge, Minneapolis-Honeywell Regulator Co., on how electronics are taught to large classes through the medium of motion pictures. He also outlined some of the possibilities of electronics for applications after the war. All enjoyed the show given by Mr. Walbridge who is a member of the RSES and a former member of Cleveland Chapter.

The announcement of this meeting as prepared by W. E. Wright carried a fine thought to be remembered by refrigeration service engineers everywhere. The message follows:

The war will be over some time and the thought strikes me as I sit here writing: "Will the boys be as close together after the war as they are now, helping each other out in the many ways that they do now? Will they be as open and frank with each other when they don't need the help of their fellow workers, as they do now, or will each one go back into his old habits and ways of doing things?"

Right now we are all pretty much in line in most phases of the business—let us continue that way when things get back to normal—give your fellow worker a break—give your employer a break—and above all give yourself a break—be honest with yourself and read the following, I read it and think it is good. What do you think?

"I am a refrigeration service engineer. In my profession I take great pride, but without vainglory; to it I owe solemn obligations that I am eager to fulfill.

"Jealous of the high repute of my calling, I will strive to protect the interests and the good name of any service engineer that I know to be deserving; but I will not shrink, should duty dictate, from disclosing the truth regarding any one that, by unscrupulous act, has shown himself unworthy of the profession.

"To my fellows I pledge, in the same full measure I ask of them, integrity and fair dealing, tolerance and respect and devotion to the standards and the dignity of our profession; with the consciousness, always, that our special expertness carries with it the obligation to serve humanity with complete sincerity."

* * *

SOUNDS THE SAME BUT IS SPELLED DIFFERENTLY

PHILADELPHIA Chapter notes in the May R.S.E. revealed an error brought to our attention by Abner Goddard. We quote: "I note under news items from Philadelphia chapter activities relative to some remarks the subscribers had made at one of our meetings in which the name of my company is misspelled as 'Sunrock,' whereas it should have been 'Sunroc.'" Signed, Abner Goddard, Sunroc Refrigeration Company.

* * *

NO IMPROVEMENT IN MANPOWER!

JOHN D. FRANK, Niagara Frontier Chapter member, and Mrs. Frank announced the arrival of Barbara Marie on April 18. The daughter is very welcome although she may not be able to assist Mr. Frank in his business.

* * *

ADMIRAL SCHEDULES DELIVERIES IN 90 TO 120 DAYS

THE Admiral Corp., Chicago, has announced that it will require not more than 90 to 120 days after July 1 to begin turning out electric refrigerators. This announcement was made recently by L. H. D. Baker, vice president in charge of Admiral appliance division. Mr. Baker is confident that deliveries of new units will begin late in October and perhaps earlier.

"Admiral already has applied to the WPB for its manufacturing priority and the next two quarter quotas," declared Mr. Baker. "Our plans are fairly well worked out and we definitely will start production on a postwar instead of a prewar model. Retooling and the installation of new machinery is not a major factor regarding production. We believe we could start immediately without reflecting on the plant's present output of war materials."

Three models are planned for the start of the Admiral line. These are a standard model, a new type delux, and the Dual-Temp. Much of this planning has transpired since the company purchased the Stewart Warner appliance division early in 1944.

HERVEEN the Replacement Refrigerant

Servicemen—Herveen is the IDEAL REPLACEMENT GAS for Meter-Misers. When your Frigidaire Meter-Miser customers need service on their unit, don't turn them down with the statement "the refrigerant is not available." We can deliver

HERVEEN the IDEAL

REPLACEMENT REFRIGERANT

Many service companies are using this refrigerant for charging Meter-Misers in their localities.

★ Meter-Miser calls become routine if you have a supply of HERVEEN.

★ Installing HERVEEN does not involve more than average care.

MODERN GAS CO., Inc. Manufacturers & Refiners
1084 Bedford Ave., BROOKLYN 5, NEW YORK

LOOK AHEAD. Can you see ANYTHING small about refrigeration for the future? Doesn't EVERY phase and branch promise something BIG for men who are themselves BIG enough to grasp the opportunities? . . .
THE U.E.I. PROGRAM OF BALANCED TRAINING (home study plus intensive shop practice) is designed for men who want to grow BIGGER in refrigeration and air conditioning knowledge and skill. It's for men either in or wanting to get into refrigeration. It is the program of training which is identified with the success of many a man who is filling some pretty big shoes in the industry today. It's the training program which for over 18 years has helped small men grow big in refrigeration. . . . If you're planning to get somewhere in this field, use the coupon below as a starter.

FREE FACTS

UTILITIES Engineering Institute
1314 W. Belden Ave.
Dept. 45, Chicago 14, Ill.

Please give me more information about Refrigeration and Air Conditioning Training, as promised in your "Refrigeration Service Engineer" June 1945 advertisement.

NAME .....
ADDRESS .....
CITY..... ZONE..... STATE.....

New and Improved Appliances

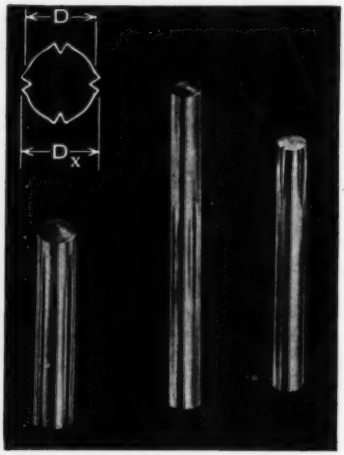
Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Self-Locking DRIV LOK Pins

A COMPLETE line of standard and special self-anchoring, vibration-proof pins which are designed to replace more expensive taper pins, keys, cotter pins, set screws, rivets, etc., are announced by The Driv-Lok Pin Co., Chicago. These pins, which are pressed or driven into standard drilled holes, have four flutes on the surface parallel to the axis. The length and position of the flute can be controlled accurately, so that fully or partially grooved pins are available. Fully grooved pins have a pilot at one end so that the pin can be easily inserted.

The raised, work-hardened edges of these flutes provide an expanded diameter of a few (specified) thousandths greater than the nominal diameter of the pin. When the pin is inserted in a drilled hole, these raised edges are compressed inwardly, providing a resilient, self-locking element which, it is claimed, will hold indefinitely under vibration or shock conditions. They are available in sizes from 3/64" to ½" diameter, and from 3/16" to 4½" in length, in any material, and in a wide variety of types.

Widely used in the automotive industry, these new pins are now available in a broad category of sizes, types, materials, and special designs to meet all types of industrial applications, providing, it is claimed, large possibilities for cost savings in initial and total labor assembly costs.



Self-locking Pin Made by Driv-Lok Pin Co.

Condensation Drip Stopped by Pipe Tape

EASE in application is one of the features of the new No Drip Tape designed to insulate cold water and other pipes to stop condensation drip. The pliable, cork-filled tape is applied as a spiral wrapping around the pipe and forms a tight, sealed jacket. According to the producers, J. W. Mortell Co., Kankakee, Ill., the tape is especially useful for pipes of one inch diameter and smaller. The tape is brown in color but may be painted if desired. Although the tape is quickly and easily applied, the makers declare that it has a long life without maintenance.

Wheel Puller

A TWO and three arm wheel puller designed to increase the grip of each arm as tension increases has been developed by the Armstrong-Bray & Co. The three-arm puller has the arms cross bored to permit them to be turned sideways as illustrated when removing spoked flywheels.

Armstrong Wheel Puller

These pullers are equipped with forged heat treated rigid steel arms. Cap screws, straps and body are also of high quality heat treated steel. The hardened forcing screw is six inches long and employs fine threads for ease in pulling tight wheels or gears. The screw has a point to fit into the regular shaft centering hole.

The company makes a number of different types of pullers for special applications where the regular puller shown here is not suitable.

Flexible Shaft Tools for Corners

IN BRINGING their tool kits back to a prewar standard servicemen will be interested in screw drivers and socket wrenches to work around corners and in tight places. Both have a luminated spiral wire shaft which bends readily but provides for strong positive turning in either direction. The handles are shock proof.

Overall length of the screw driver is 8 in. The socket wrench is 10 in. long and is provided with 6 hex sockets from 5/16 to ½ in. The manufacturer is L. B. Miller Co., 2115 Avenue U, Brooklyn, N. Y.

This GRUNOW SEAL

in your Telephone Directory

will make you MONEY

This Grunow Authorized Service Seal is one sure road to high profits in the refrigeration service business. This sign, plus genuine parts will produce business which will surprise even the most skeptical service man.

You'll gain customer confidence; eliminate "call-backs"; cut service time.

Get this ad in your local telephone directory now! Write for our Grunow Authorized Service franchise.

Grunow
AUTHORIZED SERVICE, INC.
4315 W. Fullerton Avenue, Chicago, Illinois

FACTORY TESTED PARTS

"Trap-Dri" Combines Filter And Dryer

A DEVICE that combines both a drier and a filter in one unit, "Trap-Dri" is extremely easy to install on any part of the refrigeration system. It is most effective when connected ahead of the expansion valve.

Today, with new refrigeration equipment difficult to obtain, the need for this efficient type of system protector is unusually urgent.

"Trap-Dri" effectively stops all impurities in the refrigerant lines. By combining a drier that absorbs 12 to 16 times its own weight in water, and a filter as effective as a 900 mesh strainer, it begins as soon as installed to "clean up" a job—removing gummy deposits, scale, dirt, solder and other particles—absorbing all moisture and acids in the system.

Stocked and sold by refrigeration parts jobbers, "Trap-Dri" system protectors are the product of the Automatic Products Company, Milwaukee, Wis., manufacturers of "A-P" line of thermostatic expansion valves, solenoids, cooling thermostats for commercial and industrial refrigerating systems.

Visoleak Tag Instructs Owners

DESIGNED to help refrigeration equipment owners and maintenance men detect refrigerant leaks before serious damage or loss of costly products occurs, a new "Treatment Tag" for use on refrigeration systems which have been treated with Visoleak is now in the hands of many supply jobbers.

With owner cooperation it is probable that much needless expense can be avoided. When a system has been treated with Visoleak, any leaks which may develop are shown immediately by red coloring. Affixing of the Visoleak card at time of treatment warns operators to act promptly when this evidence of leakage appears.

Refrigeration supply jobbers who have not yet received a supply of tags can obtain them on request from the manufacturer, Western Thermal Equipment Co., 5141 Angeles Vista Blvd., Los Angeles 43, Calif.

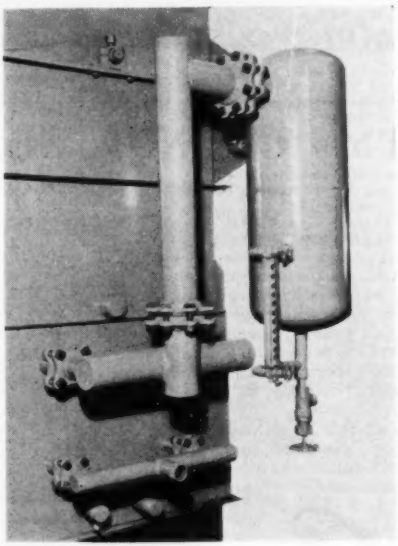
Water Coolers Back in Production

THE Sunroc Refrigeration Co., Glen Ridge, Pa., announces completion of plans for national distribution of its Sunroc water cooler. Since Pearl Harbor, production has been devoted almost exclusively to units supplied to the army, navy, and the U. S. Maritime Commission. These heavy duty coolers, built to government specifications, are duplicated for the civilian trade and the company will confine its activities to the manufacture of its own highly specialized water coolers. Three basic models equipped with bubblers and glass fillers, will be offered for sale initially.

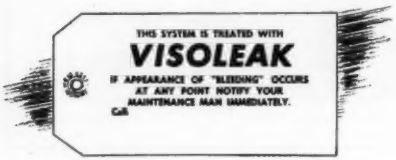
Removing Oil from Refrigerant Gas

A NEW method of removing oil from refrigerant gas is offered by the Niagara Blower Company as a part of the Niagara duopass aero condenser. The new apparatus, called the Niagara oilout uses a cylindrical drum located at the outlet of the duopass coil so that the refrigerant gas enters with a tangential motion. More oil is removed by this method because the duopass coil has reduced the temperature of the gas so that the oil vapor has been condensed.

Expansion of the system from a 4 in. pipe to a 14 inch drum (in the model illustrated) reduces the velocity of the gas so that the oil is easily removed and held by the wall and separator plates of the trap. A sight gauge and valve for draining the oil are provided. Removing oil from refrigerant gas in this manner greatly improves the efficiency and capacity of a refrigeration system.



New Oilout Designed by The Niagara Blower Co.

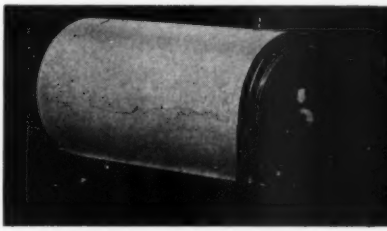

THIS SYSTEM IS TREATED WITH
VISOLEAK
IF APPEARANCE OF "BLEEDING" OCCURS AT ANY POINT NOTIFY YOUR MAINTENANCE MAN IMMEDIATELY.

NORMAL SUCTION PROCESS WATER COOLERS

6 to 25 gallon capacities.

Compact in design . . . can be mounted on floors, walls or ceilings.

Suitable for drinking water bubbler service, cafeteria or restaurant glass filler service.



WRITE FOR LATEST DATA

DAY AND NIGHT

COOLER DIVISION
DAY & NIGHT MFG. CO.
MONROVIA • CALIFORNIA
FACTORY REPRESENTATIVES
NEW YORK — A. C. Homeyer, 682 Bdwy. • CHICAGO — Marc Shantz, 565 Wash. Blvd.
ST. LOUIS — R. H. Spangler, 3331 Market St. • ATLANTA, GA. — J. E. Parker, 294 Peachtree, N. E.

V-E now for **V-J**

OUR OBJECTIVE IS— SUPPLIES! SUPPLIES! SUPPLIES! SUPPLIES!

We do our best to have the equipment and material ready for you when you need it. Special equipment or parts are ordered with the greatest possible speed.

New Phone: CENtral 2051

Automatic
HEATING & COOLING SUPPLY
(DIVISION OF WEIL-McLAIN COMPANY)

Branch at
809 WEST 74TH ST. • 647 WEST LAKE STREET CHICAGO 6, ILL.

THE CUSTOMER IS STILL RIGHT

at *Kramers!* He's right when he expects *courteous, fast* service . . . and he's right when he counts on us to care for his needs during the busy months ahead.

Big stocks of FREON—METHYL—BELTS—VALVES—ETC.

FRED C. KRAMER COMPANY
212 N. JEFFERSON ST. CHICAGO 6, ILL.
Phone—RANdolph 6288—12 Trunk lines to serve you.

SEND FOR OUR 1945 CATALOG

Reserved exclusively for the wholesale trade. Please send proper business identification with your request.

HOOD NEW REMA PRESIDENT

F. J. HOOD

F. J. Hood, vice-president of the Ansul Chemical Company, Marinette, Wis., was elected president of the Refrigeration Equipment Manufacturers Association at a meeting of the new board of directors in the LaSalle Hotel, Chicago, Thursday, May 24. He succeeds Arthur B. Schellenberg, president of the Alco Valve Company, St. Louis, Mo., as head of the association which comprises more than 75 members representing every branch of the refrigeration and air conditioning industries.

Other new officers chosen at the meeting were H. F. Spoehrer, Sporlan Valve Company, St. Louis, vice-president; Edward M. Flannery, Bush Manufacturing Company, Hartford, Conn., secretary, and J. A. Strachan, Weatherhead Company, Cleveland, treasurer. R. Kennedy Hanson continues as executive secretary with offices in the association's general headquarters in Pittsburgh.

The new directors of the organization, meeting for the first time, include the new officers and Mr. Schellenberg; R. H. Luscombe, Penn Electric Switch Company, Goshen, Ind.; C. H. Benson, Imperial Brass Manufacturing Company, Chicago; W. H. Maxwell, Wolverine Tube Division, Detroit; R. O. White, Day and Night Manufacturing Company, Monrovia, Calif.; Guy J. Henry, Henry Valve Company, Chicago; B. J. Scholl, Brunner Manufacturing Company, Utica, N. Y.; Philip T. Miner, Tyler Fixture Company, Niles, Mich.; and M. R. Oberholzer, L. H. Gilmer Company, Philadelphia.

The directors voted unanimously to direct that the retiring president, Mr. Schellenberg, send a letter to J. A. Krug, chairman of the War Production Board commending WPB on the manner in which materials have been allotted in an unbiased way to the refrigeration and air conditioning industry as well as to others. Members of REMA have been glad to have a part in the program and cooperate with WPB in its activities during the last year, the resolution said.

N. R. S. C. DISSOLVES

AT A meeting of the officers and committee chairman held in Detroit June 1, the National Refrigeration Service Council was dissolved effective June 30.

The council was formed as a wartime agency and served as a coordinating body of all segments of the industry in working with government bureaus in the interest of retaining critical service manpower as well as preparing and supervising a comprehensive program for training service replacements. This work was carried on through local councils.

Action on the dissolution was adopted inasmuch as it appeared that the objectives for which the council was formed had been attained and that current trends indicated an improvement in the immediate future.

The late John Wyllie, Detroit, served as first chairman of the council. Upon his death, he was succeeded by the present chairman, W. K. Kromer, Cleveland, O.

Chairman Kromer briefly summarized the work of the council in the war effort and expressed the opinion that its accomplishments were self-evident.

At the conclusion of the meeting, Harry Alter, Chicago, presented an engrossed scroll to Chairman Kromer as a testimonial of the appreciation of the council and industry for the tireless effort he had made and the time so liberally given in carrying out the work of the council.

In acknowledgment, Chairman Kromer expressed his appreciation for the unselfish support given him by the members of the council, associations and the industry in general.

TUCKER NEW WEST COAST MANAGER FOR DUPONT

THE appointment of Albert R. Tucker to the newly created position of West Coast manager of the Electrochemicals Department, E. I. du Pont de Nemours and Company, was announced June 7 by F. S. MacGregor, the department's general manager.

The El Monte plant and sales office at El Monte, Cal., and the district sales office at San Francisco, will be consolidated under Mr. Tucker, who has been Philadelphia district manager for the department since 1936. West Coast headquarters will be maintained at El Monte. Expansion of activities in the region is being undertaken because of the rapid pace of industrial development in the West.

VISOLEAK

is a finely-treated colored refrigerant oil which penetrates every nook and cranny of the system. The leak is indicated by a red stain – just like the discoloration on a carburetor in which ethyl gasoline has been used. Can be used *safely* and *effectively* with any type of refrigerant.

See your jobber today. If he has not stocked Visoleak write for complete information.

WHOLESALE PRICES		CASE LOTS
4 ounce bottle	$ 1.00	48 bottles
8 ounce bottle	1.75	24 bottles
1 pint bottle	3.00	24 bottles
1 quart bottle	5.00	12 bottles
1 gallon can	16.00	6 cans

SAVE 10% ON CASE LOTS

WESTERN THERMAL EQUIPMENT CO.
5141 ANGELES VISTA BLVD.
LOS ANGELES 43, CALIF.

Offers (1) Complete inventory record. (2) Part numbers always visible. (3) Easily stored in bins or on shelves.

Write for illustrated catalog and price list.

HASCO, INC.
GREENSBORO, N. C.

ARE YOU

Equipping a new Serviceman

Equipping a new Truck

Going back into Service Work

?

We have prepared a very helpful list of items suggested as a minimum stock. Several lists are available. Check the ones you want.

- ☐ Service Tools
- ☐ Parts for Domestic Service
- ☐ Parts for Commercial Service

Use your letterhead and send your inquiry to Dept. A.

THERMAL COMPANY INC.	St. Paul, 4, Minn. University at Raymond
	Milwaukee, 3, Wisc. 749 No. Seventh St.
	Des Moines, 9, Iowa 907 Locust Street
	Cedar Rapids, Iowa 503 Fourth Ave. S.E.
	Great Falls, Mont. 306 First Ave. South

VAN SCOYK ADVANCED By FRIGIDAIRE

ANNOUNCEMENT is made by Paul V. Sprout, service manager, Frigidaire Division, General Motors Corporation, that Howard E. Van Scoyk has been appointed assistant service manager of the Technical Division of Mr. Sprout's Department.

HOWARD E. VAN SCOYK

Mr. Van Scoyk has been a member of the Dayton General Motors Organization since 1928, when he served with Delco Products. He joined Frigidaire in 1929, and until his present promotion was a division engineer. He is a graduate of General Motors Institute in electrical products engineering. Since the beginning of the war he has served in the War Products Engineering Division, as staff head and division manager.

E. E. Landis will continue as assistant manager in charge of the fied contact and service parts sales, and other departments associated with the office, inventory control, shipping and cataloging.

WESTINGHOUSE APPOINTS VASSAR GENERAL SERVICE MANAGER

THE appointment of John A. Vassar as general service manager of the Westinghouse Electric Supply Co. is announced by David M. Salsbury, vice president and general manager. Mr. Vassar will have offices in New York. In his new position, he will be responsible for the Electric Supply Company's nation-wide service department operations, including home appliances and radios.

Coming to the Westinghouse Electric Corporation, parent concern of the Supply Company, in 1929, Mr. Vassar was appointed assistant service manager of the Electric Appliance Division with headquarters at Mansfield, Ohio. He joined the Supply Company May 1 of this year in his new post. The Westinghouse Electric Supply Company is the national wholesale marketing outlet for the Westinghouse Electric Corporation and many other suppliers of apparatus, home appliances and supplies.

LOGAN JOINS ELECTRIC POWER EQUIPMENT CORPORATION

RECENTLY reported as planning to enter the commercial refrigeration field, Electric Power Equipment Corp. of Philadelphia has announced that Charles R. Logan is now associated with the company as vice-president in charge of sales.

Mr. Logan has been identified with the industry for twenty-one years and joins ELPECO after having served as Eastern District Manager for Superior Valve and Fittings Company. He was also formerly Commercial Regional Supervisor of the York Corporation, and director of Refrigeration Sales for the Electrolux Division of the Philadelphia Gas Works Company.

Mr. Logan is a past president of the American Society of Refrigeration Engineers, and has worked energetically with the Philadelphia section where he served as chairman for two terms.

GENERAL CONTROLS ANNOUNCES SERVICE MANUAL

A NEW service and instruction manual on automatic gas heating controls has been prepared by the General Controls Co., Glendale, Calif. Covering eight separate types of controls made by the company, the booklet is arranged with a description, operation, installation, and adjustment or service troubles on each type. Graphic illustrations are used showing hook-ups and wiring circuits for ready reference on installation work. Line drawings are shown of the various controls and thermostats manufactured by the company.

DETROIT LUBRICATOR NAMES NEW VICE PRESIDENTS

C. H. Hodges, Jr., president of the Detroit Lubricator Company, announces the appointments, effective May 1, 1945, of E. J. Doucet, general sales manager, to vice-president and general manager sales, with headquarters at Detroit; and K. B. Thorndike, manager, Western Regional Office, to vice-president, Western Regional Office, with headquarters in Chicago.

I have enjoyed every copy of Refrigeration Service Engineer and want to renew my subscription.—Floyd Wilkey.

THE HARRY ALTER CO.

★ 1728 S. Michigan Ave. Chicago, Ill. — Two Big Warehouses to Serve You — 134 Lafayette St. New York, N. Y. ★

Speed up YOUR REFRIGERATION SERVICE

3 Tools in ONE...JUSTRITE

1. A gas leak detector for systems which use Freon, Carrene and other non-combustible Halide gases. 2. A light-weight "Power-Flame" soldering set for repairing connections or wiring. 3. A blow torch for "sweating" joints.

Quickly convertible. All parts built of the finest material.

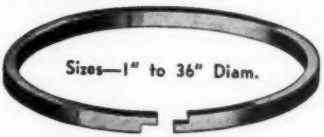
Available now for priority orders. Ask your jobber.

JUSTRITE MANUFACTURING CO.
2063 No. Southport Ave., Dept. B-7, Chicago, 14, Ill.

SINCE 1921..

MILLIONS OF **AUTO-DIESEL** LADLE TEMPERED PISTON RINGS HAVE BEEN *Used in Many Fields!*

For nearly 25 years AUTO-DIESEL "Ladle Tempered" Piston Rings have been sold from coast to coast to all types of industries. They are used as original equipment and replacement for Diesel powered units of all types—stationary and mobile units and hydraulic and pneumatic operated industrial equipment. Many firms, down through the years, have standardized on AUTO-DIESEL Piston Rings because of the uniform high quality that we have always maintained.



Write for Information

THE AUTO-DIESEL PISTON RING CO.
3157 Superior Ave. CLEVELAND 14, OHIO

QUALITY RINGS SINCE 1921

PUT RUST TO WORK!

Brush or spray Nobs Glazecoat directly on rust. Rust aids in forming a permanent thermo-plastic coating that is not affected by water, alcohols, dilute acids, or alkalies. Prevents further rusting. Stands heat to 400° F. Covers about 300 sq. feet per gallon.

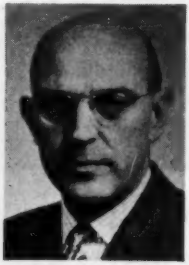
Price.....$3.50 per gal. F.O.B. Los Angeles

NOBS CHEMICAL COMPANY
2465 East 53rd Street, Los Angeles 11, Calif.
Seattle San Francisco

CHANGES IN BRUNNER MFG. CO. ENGINEERING DEPT.

THE following changes in personnel for the Brunner Manufacturing Co., Utica, N. Y., has been announced by S. R. Hirsh, chief engineer.

ALFRED D. SULLIVAN



CARLTON G. GEIERSBACH

Alfred D. Sullivan has been appointed test and application engineer. Mr. Sullivan received his B.M.E. degree from Cornell University in 1943, where he majored in heat and refrigeration engineering. Following graduation from Cornell, he became a development engineer on reciprocating compressors for the Carrier Corp., Syracuse, N. Y., becoming head of Carrier's testing department on reciprocating compressors in 1944, the position he held until transferring to the Brunner organization.

Carlton C. Geiersbach has been appointed design and development engineer. Mr. Geiersbach has been with the Brunner Engineering Department since 1936. He studied for two and one-half years at the University of Michigan and left there in 1929 to enter industry. His engineering experience after leaving Michigan and until joining the Brunner organization in 1936 was on general machine and tool design in varied industries.

S S S

ALCO VALVE RECEIVES SECOND ARMY-NAVY AWARD

A SECOND renewal of the Army-Navy "E" Award for meritorious service on the production front has been granted to Alco Valve Co., St. Louis, Mo., manufacturers of air conditioning and refrigeration control valves. The original award was made to Alco in March, 1944, and the first star was added in November of last year. Notice of the second renewal was made in a letter from Adm. C. C. Bloch, USN (ret.), Chairman, Navy Board for Production Awards.

BOURNS JOINS WESTINGHOUSE

THE appointment of H. C. Bourns as central district supervisor of the refrigeration specialties department of the Westinghouse Electric Appliance Division has been announced by J. E. Hugo, central manager of the division. Mr. Bourns assumed his new duties on December 1 and will be located at the company's central district headquarters at Mansfield, Ohio.

Mr. Bourns comes to Westinghouse with a background of broad experience in refrigeration, having been previously with the Bernard Gloekler Company, Mills Novelty Company and Harold L. Schaefer.

In his new capacity, Mr. Bourns will be responsible for the sale of the products of the refrigeration specialties department in the central district, comprising Ohio, Michigan, Western Pennsylvania, and some counties in West Virginia and Kentucky.

A native of Pittsburgh, Mr. Bourns, an industrial engineer, is a graduate of the University of Pittsburgh. He studied post-graduate courses at Harvard University and Carnegie Institute of Technology.

S S S

MARLO COIL COMPANY ENLARGES MANUFACTURING PLANT

WPB approval, just received, authorizes new building and plant facilities of Marlo Coil Company, St. Louis, adding approximately 14,000 square feet to the present 24,000 square feet plant floor area. Construction has been started and when completed, the rearranged plant will provide augmented production capacity to meet the rapidly expanding demands for the full line of heat transfer equipment Marlo builds.

Part of the space is allocated to an increased production of evaporative coolers for Diesel engines, transformers, cutting and quenching oils; together with improved production facilities for air conditioning, industrial and commercial refrigeration equipment.

S S S

WILLIAMS-ICE-O-MATIC IN MERGER

SHAREHOLDERS of the Williams Oil-O-Matic Heating Corporation, manufacturers of Williams Ice-O-Matic refrigeration and air conditioning equipment, voted May 28 for a merger with the Eureka Vacuum Cleaner Company of Detroit, Mich., and officials said Eureka stockholders meeting at Detroit also had approved the plan.

ZEROSAFE
FARM FREEZER Model FF-60
Capacity: 60 cu. ft.
Other models from 15 to 80 cu. ft.

IT'S NO SECRET . . .

There's no secrecy about Wilson Post-War Plans . . . Wilson Milk-Cooling Systems, Wilson Reach-Ins and Walk-Ins for both normal and low-temperature applications, and Wilson Farm Freezers will continue to emphasize the designs, materials and workmanship which have always distinguished Wilson Cabinet Company products.

The Wilson Farm Freezer illustrated is for a farm family of six.

FOR YOUR PERSONAL USE: Let us send you our booklet on the home freezing of foods . . It's free to you . . . Address: Dept. 14

WILSON CABINET CO., Smyrna, Delaware

Controls Repaired & Rebuilt

Just Mail In Controls — We Handle The Rest

COMMERCIAL—DOMESTIC—INDUSTRIAL

One Year Guarantee
Each Control Reset and Cycle Tested

Domestic Cold Controls (Modern Type)	$2.00
Commercial Controls (Pres. or Temp.)	2.50
Commercial Dual Controls	3.00
Automatic Water Valves	2.00
Automatic Expansion Valves	1.75
Thermostatic Expansion Valves	3.00

All Prices F.O.B. Chicago and subject to change without notice.

ACME CONTROL SERVICE
5525 Lawrence Avenue—Chicago 30, Illinois
Phone PENsacola 5303

CONTROL REPAIR SERVICE

Domestic Controls reconditioned equal to new at a small cost. All work guaranteed for one year. Prices upon request.

United Speedometer Repair Co.
342 W. 70th Street
New York City 23

WEST COAST CONTROL SERVICE

Cold Controls • Pressure Switches

One year guarantee on all repairs

Original Factory Specifications

UTILITY THERMOSTAT CO.
4011 Halldale Ave., Los Angeles 37, Calif.

AUTOMATIC EXPANSION VALVES

repaired or exchanged
at $1.75 F.O.B. Chicago

☆ ☆ ☆

Until further notice we will be unable to accept other types of repair work.

ALL WORK GUARANTEED FOR 90 DAYS

NEW DUTY
2424 Irving Park Blvd., CHICAGO 18

EXTRA SERVICE!

When You Buy from CHASE You Get Prompt Plus Personalized Service. No Order Is Too Small to Receive Attention. We Carry Complete Stocks. SAVE—TIME and MONEY. Buy Where You Can Get Everything You Need for Refrigeration.

Send for Shop Equipment Catalog

CHASE REFRIGERATION SUPPLY COMPANY
546-48 W. 119th St. CHASE BLDG. Chicago 28, Ill.

"The Chart is a necessary part of my equipment"

so says this service man

• Now that the Calculator is being put to the test of practical use in the field, we have had a number of letters from service men testifying to its value. This one is typical.

Sometime ago I purchased a Head-Back Pressure Calculator from you, but misplaced it. The chart is a necessary part of my equipmemt, so please send me another.

J. V. Farmer

WRIGHT'S

H. B. P.

CALCULATOR

The purpose of the Head-Back Pressure Calculator is to quickly determine the proper head pressure, for the following refrigerants when the suction pressure, room temperature or mean water temperature is known.

Carrene	Methyl
Isobutane	Freon or F-12
Sulphur Dioxide	Ammonia
Carbon Dioxide	

Actual Size 3½" x3½".

A Vestpocket Tool Every Service Man Should Carry

A number of troubles can be detected by comparison of the existing head pressure and what the head pressure should be, but in the past there has been no convenient method available to the service engineer to determine what the correct head pressure should be. Such variable conditions as the suction pressure, room temperature, water inlet and outlet temperature, kind of gas used, etc., all determine the proper head pressure. It is not practical to depend on one's memory of other similar conditions or to just use snap judgment when this handy calculator gives you the correct answer so easily. Send for it today! Sturdily constructed, with oil-proof finish, for on-the-job use.

POSTPAID $1.00

NICKERSON & COLLINS CO.

435 N. WALLER AVE., CHICAGO

A PERFECT ROTARY SEAL JOB ASSURED WITH SCHULTZ SEAL RING PULLER

PRICE $1.95

THE LONG THIN JAWS

PULL THE TOUGHEST SEAL RING

WITHOUT MARRING THE SHAFT

ESPECIALLY USEFUL TO PULL

INSIDE NORGE SEAL RINGS

For Sale by Your Refrigeration Jobber

—OR—

REFRIGERATION SERVICE, INC.

3109 BEVERLY BLVD., LOS ANGELES 4, CALIF.

GASKETS

SPEED VICTORY

Write for complete catalog.

• Until Victory is won, war orders come first. Today, our gasket service for every refrigeration need is helping speed war production. Under these conditions, delays in filling other orders are unavoidable.

CHICAGO-WILCOX MFG. CO.

7701 Avalon Ave. Chicago 19, Illinois

REFRIGERATION SUPPLIES

It's that extra measure of service that means so much today when you need parts and supplies immediately.

You can **DEPEND ON BLYTHE**

to get the supplies you need

An order on your letterhead will be promptly handled to your satisfaction.

H. W. BLYTHE COMPANY

2334 S. Michigan Ave., Chicago 16, Ill.

SERVICE MEN—

ADDED PROFITS ARE POSSIBLE

Eliminate the lost time from service calls by using our repair service on compressors. We specialize in prompt efficient workmanship on your compressor repairs. 90 day guarantee—Reasonable prices.

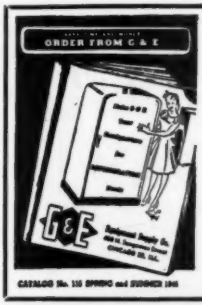
We do not repair Hermetic units.

Write for quotations to

Keystone Engineering Corp.

844 Keystone Ave., Chicago 51, Ill.

Phone: BELmont 5635



SEND FOR *1945* **CATALOG**

READY FOR MAILING *Now*

G & E EQUIPMENT SUPPLY COMPANY

400 N. Sangamon Street

CHICAGO 22, ILL.

SERVEL **FOR YEAR-ROUND PERFORMANCE**

Low, safe temperatures throughout the summer, as well as in cooler months, are maintained *dependably* by Servel Condensing Units. Remember, proper installation and servicing are important. See your refrigeration parts jobber for genuine Servel parts.

SERVEL, Inc. Electric Refrigeration and Air Conditioning Division Evansville 20, Indiana

Present and Post-War Opportunities

REFRIGERATION

Household—Commercial—Air Conditioning • ***Day-Evening Classes***

Part and Full Time Day Course for Local and Out of Town Students

VETERANS **Y.M.C.A. Schools Are Approved Under G.I. Bill of Rights**

Well-known Refrigeration Engineer, L. K. Wright, in Charge

Licensed by the State of New York • *Large Approved Teaching Staff*

Students Enjoy Full Physical Privileges (Rooms and Meals Available)

Write Today for Catalog

5 West 63rd Street **THE Y.M.C.A. SCHOOLS** New York 23, N. Y.

One of the oldest schools in the East

AIRCO REFRIGERATION PARTS Reg'd

CANADA

Offers the lowest net prices on dependable replacements parts in Canada. Our one day service policy on all your needs. Saves you time.

1374 W. Notre Dame Street
MONTREAL

Make That
COIL AND VALVE
PERFORM

STERLING SILVER
ACME THERMOMETER ATTACHMENTS

FAST-ACCURATE
ADAPTABLE TO
ANY SIZE TUBING

ACME PRODUCTS CO.
SAN ANTONIO, TEX.
Makers OF ACME VALVE SEATS
ACME METHYL COMPENSATORS

DO IT TODAY!

The sooner you get your copy of the NEW 1945

AIRO
Wholesale
CATALOG
of Refrigeration and Air Conditioning
PARTS — TOOLS — SUPPLIES

the sooner you'll understand why "you'll like to buy from Airo Supply."

Write today on your letterhead, please

AIRO SUPPLY CO. (NOT INC.)
WHOLESALE ONLY
2732 N. Ashland Ave., Dept. A
Chicago 14, Illinois

REFRIGERATION SERVICE *as in*

any other business needs trained men to do the work.

How many service calls are you passing up for lack of help?

Will an additional serviceman or more relieve you of routine work so you can plan now to expand for business to come?

Get that help now and be prepared for the added business in your area.

Men trained by refrigeration service engineers for the service industry are available.

Write or phone your requirements to

Commercial Trades Institute
209 W. Jackson Blvd., Chicago, Ill.
200 S. 20th St., Birmingham, Ala.

FLOCHECK

● *New* Type Control Fits *All Makes* and Sizes of Water Valves. Starts and stops water flow to condenser *immediately* when switch starts or stops compressor. Good bye to water dripping, water waste and water valve seatwear. Write for bulletin.

FLOW CONTROLS, INC.
1821 W. North Ave., Chicago 22, Ill.

Remanufactured
AIR-COOLED
CONDENSING UNITS
¼ H.P. to 1½ H.P.
COMPLETE WITH SINGLE PHASE MOTORS
60 Cycle 110-220 V.
ALSO
FROSTED FOOD CABINETS
EDISON COOLING CORP.
310 E. 149th St. N. Y. 51, N. Y.

MAYFLOWER
UNITS AND PARTS
COMPLETE stocks of genuine Mayflower Condensing Units and Parts. Service men, consult your jobbers, or write us direct. Jobbers, we solicit your inquiries.

MAYFLOWER PRODUCTS, Inc.
13 S. 5th St.
Richmond, Ind.

CHECK DOOR GASKETS ON EVERY JOB

JARROW PRODUCTS
420 N. LA SALLE ST. CHICAGO 10, ILLINOIS

WRITE FOR CATALOG

Due to the paper shortage we will not issue a catalog in 1945.

SERVICE PARTS COMPANY
2511 Lake St. **Melrose Park, Ill.**

Advertisers Index

Acme Control Service 91
Acme Products Co. 94
Acme Refrigeration Parts Co. 75
Aerovox Corporation 79
Airco Refrigeration Parts 94
Airo Supply Co. 94
Alco Valve Co. 65
Alter Company, The Harry ..... 77 and 89
Ansul Chemical Company 1
Audel & Co., Theo. 53
Auto-Diesel Piston Ring Co. 89
Automatic Heating & Cooling Supply Co. 85
Automatic Products Co. ..... 48 and 49

Blythe Company, H. W. 93
Bonney Forge & Tool Works ..... Back Cover
Brunner Mfg. Co. 51

Chase Refrigeration Supply Co. 91
Chicago Seal Co. ..... Inside Front Cover
Chicago-Wilcox Manufacturing Co. 93
Commercial Trades Institute 94

Davison Chemical Corp. ..... Inside Back Cover
Day & Night Mfg. Co. (Cooler Div.) 85
Detroit Lubricator Co. ..... 2 and 3
Dole Refrigerating Co. 57
Du Pont de Nemours & Co., E. I. (Electrochemicals Dept.) 12

Edison Cooling Corp. 95
Electrimatic Valve 79

Flow Controls, Inc. 95

G & E Equipment Supply Co. 93
General Controls 61
Grunow Authorized Service Co., Inc. 83

Hasco, Inc. 87
Henry Valve Co. 8
Highside Chemicals Co. 5

Imperial Brass Mfg. Co. 7

Jarrow Products 95
Joliet Chemicals, Ltd. 63
Justrite Manufacturing Co. 89

Kerotest Manufacturing Co. 67
Keystone Engineering Corp. 93
Kramer Co., Fred C. 85
Kramer-Trenton Co. 15

Logan Engineering Co. 69
Lynch Mfg. Co. 9

Mayflower Products, Inc. 95
McIntire Connector Co. 14
Minneapolis-Honeywell Regulator Co. 73
Mine Safety Appliances Co. 78
Modern Gas Co. 81
Mueller Brass Co. 10

Nash-Kelvinator Corp. 11
New Duty 91
Nobs Chemical Co. 89

Ranco, Inc. 16
Refrigeration Maintenance Corp. 77
Refrigeration Service, Inc. 93

Sanitary Refrigerator Co. 83
Servel, Inc. 93
Service Parts Co. 95
Sporlan Valve Co. 71
Superior Valve & Fittings Co. 59

Tecumseh Products Co. 6
Temprite Products Corp. 13
Thermal Co., Inc. 87

United Speedometer Repair Co. 91
Utilities Engineering Institute 81
Utility Thermostat Co. 91

Virginia Smelting Co. 4

Weatherhead Co., The 18
Western Thermal Equipment Co. 87
White-Rodgers Electric Co. 55
Wilson Cabinet Co. 91
Y. M. C. A. Schools, The 94

Classified Ads

Rate: Two Dollars for fifty words or less, 30 cents for each additional ten words or less.

WANTED—Steady opportunity for good serviceman with commercial experience. Will start right man off at $100.00 per week. This is a steady job 12 months a year, with old established company having several national franchises. Located in exceptionally fine town ideally located and close to Chicago. Address Box JU-1, THE REFRIGERATION SERVICE ENGINEER, 433 N. Waller Ave., Chicago 44, Ill.

HELP WANTED—Refrigeration Service and shop man capable of making repairs, analyzing trouble and estimating. Must have years of experience and be a top notch man on commercial, domestic and air-conditioning equipment. Salary commensurate with experience and demonstrated ability. Fine permanent position with Minneapolis concern for right man. Address Box JU-3, THE REFRIGERATION SERVICE ENGINEER, 433 N. Waller Ave., Chicago 44, Ill.

WANTED—Air Conditioning Servicemen. Carrier air conditioning installer and distributor wants men for steady employment at good wages. Established 10 years. Excellent opportunity to become part of the growing air conditioning industry. Write, giving experience and other details. Air Comfort Corporation, 1307 S. Michigan Ave., Chicago 5, Ill.

WANTED—Our Refrigeration Service Men earn $5,000-$7,500 annually. Nationally recognized as foremost refrigeration service and installation organization in the country. Sixteen years in service business—Chicago and Detroit. Permanent positions to capable service men. Executive advancement possibilities in post war expansion program. Refrigeration Maintenance Corp., 321 E. Grand Ave., Chicago, Ill.

WANTED—REFRIGERATION SERVICE MEN. We offer steady employment—High wages, plus Car Allowance and Commissions on new equipment sales to experienced domestic and commercial servicemen. Excellent opportunity for advancement. Make arrangements now to work for a large, long established Service Company holding service contracts with national manufacturers, such as Kelvinator, Stewart Warner, Hot Point and others. Write us today, giving experience, background, and other pertinent details. Murphy & Miller, Inc., 1326 S. Michigan Ave., Chicago 5, Illinois.

FOR SALE—Prefabricated sectional new metal walk-in storage coolers, all sizes. 10 gal. water coolers. New bottle coolers. Ice makers. Frosted Food cabinets. Water and air cooled condensing units. Write for list and prices. EDISON COOLING CORP., 310 E. 149th St., New York 51, N. Y.

FOR SALE—Universal Refrigeration Tools. Dandy 16 piece set; Midget Pliers, Diagonal Cutters, Four Midget End Wrenches, Needlenose Pliers, Screw Holder, Six Punches & Chisel, Round File, Midget Crescent Wrench, $14.85. Remit with order. Immediate shipment overnight by air to anywhere, USA. Universal Tool Company, 1527 Grand RSE, Kansas City, Mo.

ATTENTION MANUFACTURERS—Canadian member Refrigeration Service Engineers Society with good business background and sales ability wishes to become Jobber, Distributor or Manufacturer's Agent for a well established firm. Good connections and able to manage business efficiently. Part time as now fully employed; this ad is in compliance to National Selective Service regulations. Address BOX MY-1, THE REFRIGERATION SERVICE ENGINEER, 433 N. Waller Ave., Chicago 44, Ill.

DAVISON'S SILICA GEL

goes further...does more

Davison's Silica Gel was developed under close collaboration with refrigeration engineers who knew only too well the short-comings of ordinary drying agents... Recognized as a basic contribution to the refrigeration industry, Davison's Silica Gel ends moisture troubles and other danger-creating elements that stop most drying agents. Davison's is the complete drying agent, as these advantages prove.

1. It is processed especially for the dehydration of refrigerants.
2. Its scientifically-determined particle size assures you that the refrigerant will not channel—will be distributed evenly throughout the cartridge.
3. This even distribution of the refrigerant makes it possible for it to be in complete contact with the entire pore-surface area at all times.
4. It removes acids . . . corrosive compounds and other impurities . . . in addition to moisture—instantly.
5. Its capacity for moisture is not affected by oil.
6. It will not cake nor powder.
7. It will not attack metals or alloys.

To get this COMPLETE DRYING AGENT that is effective on Freon, Methyl Chloride, Sulphur Dioxide, etc., specify Davison's Silica Gel from your jobber—in factory-charged dehydrators or in bulk for refill.

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON'S SILICA GEL:
CANADIAN INDUSTRIES LIMITED, General Chemicals Division

There's a big difference in open-end wrenches. And mechanics who have been working with Bonney Wrenches for years know how big that difference really is. You don't need space above the nut with these open-end wrenches. And their pear-shaped heads let you turn further in tight places. Easier to use. Get the job done faster. They're custom-hardened, too. And precision milled. That's why they do such a good job for such a long, long time. For further information on Bonney Tools, see your nearest Bonney Jobber or Distributor.

ARMY E NAVY

BONNEY TOOLS

BONNEY FORGE & TOOL WORKS
717 N. MEADOW ST., ALLENTOWN, PA.
In Canada: Gray-Bonney Tool Company, Ltd.
St. Clarens & Royce Aves., Toronto

BUY MORE WAR BONDS AND KEEP THEM